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ABSTRACT

Selected articles on various aspects of biology teaching published in 1985 have been annotated in this bibliography. Entries from 25 journals representing nine countries are presented according to a topic area classification scheme listed at the beginning of the volume. Countries represented include: Bulgaria; Czechoslovakia; Federal Republic of Germany; France; German Democratic Republic; Poland; Soviet Union; United Kingdom; and the United States. The 18 general topic areas include: didactics of biology as a scientific discipline; history of biology teaching; biology instruction abroad; educational and teaching objectives; biology teaching at general education schools; gnoseological, psychological, and logical foundations of biology teaching; content of biology instruction; didactical principles in biology instruction; methods of biology instruction; biology instruction media; organizational forms in biology instruction; planning biology instruction; outcomes of biology instruction; biology teachers; articles concerning scientific biology suitable for biology instruction; nature conservation and environmental control studies; geology, mineralogy, petrography, and paedology studies; technique and economics studies related to biology. Each entry, numbered according to a code in the classification scheme, includes author, original title (and English translation when appropriate), complete journal reference, and English abstract. Entries do not necessarily reflect all the topic and sub-topic areas included in the classification scheme. (RT)

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DIDACTICS OF BIOLOGY

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Table of Contents Page

List of excerpted journals I
Authors of annotations II
Bibliographic summary sheet and classification of entries III

List of excerpted journals

ABC mladých techniků a přírodovědců 29, 1984-1985, No. 1 - 26	Czechoslovakia
Biologia i chimija, 28, 1985, No. 1 - 6	Bulgaria
Biologia w szkole, 38, 1985, No. 1 - 6	Poland
Biologie - Géologie, 72, 1985, No. 1 - 4	France
Biologie in der Schule, 34, 1985, No. 1 - 12	GDR
Biologija v škole, 52, 1985, No. 1 - 6	USSR
Der mathematische und naturwissenschaftliche Unterricht, 38, 1985, No. 1 - 8	FRG
Journal of Biological Education, 19, 1985, No. 1 - 4	UK
Komensky, 109, 1984-1985, No. 1 - 10	Czechoslovakia
Krkonoše, 18, 1985, No. 1 - 12	Czechoslovakia
Natural Science at School, 22, 1985, No. 1 - 4	UK
Naturwissenschaften im Unterricht - Biologie, 32, 1985, No. 1 - 12	FRG
Památky a příroda, 10, 1985, No. 1 - 10	Czechoslovakia
Praxis der Naturwissenschaften - Biologie, 34, 1985, No. 1 - 12	FRG
Přírodní vědy ve škole, 34, 1984 - 1985, No. 1 - 10	Czechoslovakia
Science Education, 69, 1985, No. 1 - 2	USA
Teaching Science, 3, 1985, No. 1 - 2	UK
The American Biology Teacher, 47, 1985, No. 1 - 10	USA
The Science Teacher, 52, 1985, No. 1 - 9	USA
The School Science Review, 66, 1985, No. 1 - 4	UK

Učební pomůcky ve škole a osvětě, 24, 1984 - 1985, No. 1 - 10	Czechoslovakia
Unterricht Biologie, 10, 1985, No. 102 - 111	FRG
Věda a technika mládeži, 39, 1985, No. 1 - 26	Czechoslovakia
Vesmír, 64, 1985, No. 1 - 12	Czechoslovakia
Živa, 33, 1985, No. 1	Czechoslovakia

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Jiřina Chlumská, promovaný biolog

Bibliographic summary sheet and classification of entries

Page

1 The didactics of biology as a scientific discipline 1

1.1 The subject-matter of the didactics of biology

1.2 Definitions and objectives

1.3 The significance of didactics for practical biology instruction

1.4 Relation to other sciences and place in system of sciences

1.5 Basic terms and scientific terminology

1.6 Scientific methods, main sources and organization of scientific research

1.7 Basic differences existing in biology instruction and the didactics of biology in capitalist and socialist societies

1.8 Periodicals on the didactics of biology

1.9 Textbooks and printed lectures on the didactics of biology

2 The history of biology teaching and the didactics of biology

2.1 The history of biology teaching and the didactics of biology in Czechoslovakia

2.2 The history of biology teaching and the didactics of biology in Czarist Russia and the USSR

2.3 The history of biology teaching and the didactics of biology in other socialist countries 2

2.4 The history of biology teaching and the didactics of biology in the foremost capitalist countries

3 Contemporary biology teaching and the didactics of biology abroad 4
3.1 Contemporary biology teaching and the didactics of biology in the foremost capitalist countries 5

4 Educational and teaching objectives and the tasks of biology instruction

5 Biology teaching as a component of instruction at general education schools
5.1 Relations between biology as a science and biology instruction at general education schools
5.2 Specific aspects of biology instruction at general education schools
5.3 Specific aspects of biology instruction at specialized and vocational schools
5.4 Principles of adjusting biology instruction to general education school
5.5 The position of biology in the curriculum of general education schools
5.6 Specific aspects of biology instruction at various levels of general education schools
5.7 Mutual relations between biology instruction at various levels of general education schools
5.8 The educational and teaching significance of instruction in various biological fields, mutual relations between various biological fields,

determining the sequence of individual biological fields of study
5.9 Optional biology instruction in general education schools

6 The educational and teaching process of biology instruction and its gnoseological, psychological and logical foundations
6.1 The forming of biological notions and terminology 12
6.2 Acquainting pupils with biological laws
6.3 Acquainting pupils with the use of biological knowledge in practice
6.4 Teaching pupils basic scientific methods used in biology, and acquainting them with school biology technical media
6.5 The forming of skills and habits, developing of abilities
6.5.1 The forming of hygienic habits
6.6 The use of acquired knowledge, skills and habits in practice
6.6.1 Combining biology teaching and socially beneficial work
6.7 Guiding pupils towards the use of successful learning methods in biology. Activation of pupils. Self-control. Pupil interests 17
6.7.1 The study of causes of pupils´ failure in biology 20
6.7.2 The education of logical thinking in biology instruction

6.7.3 Developing language skills in biology instruction

6.7.4 Logical models in biology instruction, cybernetic models in biology instruction 23

6.8 Scientific education in biology instruction 24

6.8.1 The forming of a scientific worldview in biology instruction

6.8.1.1 Moral education 25

6.8.2 Atheistic education in biology instruction 26

6.8.3 Education towards socialist patriotism and proletarian internationalism in biology instruction 27

6.8.3.1 Education to peace 30

6.8.4 Labour education in biology instruction 31

6.8.5 Polytechnical education in biology instruction 40

6.8.6 Aesthetical education in biology instruction 41

6.8.7 Education towards nature conservation and environmental control in biology instruction 43

6.8.8 Health care education in biology instruction 71

6.8.9 Sex education in biology instruction 78

6.9 Vocational guidance in biology instruction

6.9.1 Education towards parenthood in biology instruction

6.9.3 Education towards defence in biology instruction

7 The content of biology instruction

7.1 The principles for selecting teaching subject-matter, methods of this selection and the organization of teaching subject-matter

7.1.1 The integration of biology and other natural science

subjects
7.1.2 Instruction on the basis of examples and categories
7.1.3 Problem teaching, project teaching 81
7.1.4 Team teaching
7.1.5 Historical approach in biology teaching
7.2 Selecting guiding principles of biology instruction and differentiating substantial and insubstantial teaching subject-matter, basic teaching subject-matter
7.3 Planning teaching subject-matter for various grades. The principles of planning the subject-matter for various grades. The principles of ordering the subject-matter into a didactical system. Differentiation in biology instruction 83
7.4 Linear, concentrical, and spiral ordering of teaching subject-matter
7.5 Dividing the subject-matter into chapters, topics and partial topics
7.6 Biology curricula and teaching syllabi 84
7.6.1 Primary instruction curricula and teaching syllabi 89
7.6.2 Natural science curricula and teaching syllabi 89
7.7 Investigation of contemporary biology instruction curricula and syllabi 90
7.8 The comparative study of curricula in the socialist countries and the foremost capitalist countries, positive and negative aspects of these curricula
7.9 Endeavours for modernization in biology instruction 91

8 Didactical principles in biology instruction
8.1 The didactical principle of a scientific approach
8.2 The didactical principle of combining school work with every-day life. Regional and current principles
8.3 The didactical principle of educational instruction
8.4 The didactical principle of a systematic and consecutive approach
8.5 The didactical principle of object teaching, or unity of the concrete and abstract
8.6 The didactical principle of combining theory and practice
8.6.1 The didactical principle of comprehensibility
8.6.2 The didactical principle of awareness of the knowledge learnt
8.6.3 The didactical principle of the permanency of the knowledge learnt
8.7 The didactical principle of respecting the individuality of the pupil 93
8.8 The didactical principle of respecting interdisciplinary relations 96
8.9 The didactical principle of hygienic and safe biology instruction 99
9 Methods of biology instruction
9.1 The dependency of methods used in biology instruction on the scientific methods used in biology
9.2 Classification of methods used in biology instruction

9.3 Principles of selecting an instruction method and its correct use

9.4 The method of continuous exposition

9.5 Interview method 99

9.6 Method of work with literature /i.e. with textbook, syllabus, workbook, worksheet, atlas, and the keys of identification of flora and fauna/

9.7 Method of observation 100

9.8 Method of experiment 111

10 Biology instruction media 129

10.1 Individual types of media, their importance

10.1.1 Investigation of the didactical value of media used in biology instruction

10.1.2 Principles for providing schools with media for biology instruction

10.2 Original live objects

10.2.1 Original objects in the environment

10.2.2 Original objects in an artificial environment

10.2.3 Living nature corners in schools 130

10.2.4 Aquariums, micro-aquariums, terrariums, aqua-terrariums

10.2.5 Insectariums

10.2.6 Breeding animals in schools, breeding facilities, collecting animals. Animal collection calendars 131

10.2.6.1 Zoological garden

10.2.7 Cultivating plants, hydroponics, fertilizing 141

10.2.7.1 A school plot botanical garden, young naturalists

stations. School biology centres, school forestry areas, instructional trails, Alpine rockeries, Pioneer houses 148
10.2.7.2 Exhibitions 153
10.2.7.3 Museums
10.3 Mounted and preserved original objects
10.3.1 Dismantled natural objects
10.3.2 Dry and paraffin specimens of plants with shape intact
10.3.3 Herbariums
10.3.4 Collections of seeds, cross-sections of woody species, branches with buds, samples of plant disease
10.3.5 Plant specimen mounted in fluids
10.4 Entomological specimens
10.4.1 Dismantled animals
10.4.2 Dissections of animals 155
10.4.3 Skin samples, texidermal specimens, paraffin specimens of animals
10.4.5 Osteological specimens, specimens of skin derivatives
10.4.7 Specimens of bird eggs and nests, bird feathers and pellets
10.4.8 Specimens of moluscs, shells and conches
10.4.9 Animals preserved in fluids
10.5 Multiplications and collections of nature objects 156
10.5.1 Microscopy specimens of plants
10.5.2 Microscopy specimens of animals and those

pertaining to human biology
10.5.3 Palaeontological plant material
10.5.4 Palaeontological animal material 157
10.6 Three-dimensional representation media
10.6.1 Models 158
10.6.2 Imprints and casts 162
10.7 Two-dimensional representation media
10.7.1 Films /school films, film cassettes, popular science films, etc./ 163
10.7.2 Television and radio in schools 164
10.7.3 Pictures, bas-relief representation 167
10.7.3.1 Pictures attached to flannel sheets 170
10.7.3.2 Pictures attached to magnetic board 170
10.7.3.3 Foils and transparencies
10.7.4 Photographs, micro-photographs, macro-photographs, photo-herbarium
10.7.5 Slides, film strips, projected microscopical specimens, diaphones 175
10.7.6 Sketches, floral diagrams and formulas, models for copying 177
10.7.7 Tape-recordings of animal voices, gramophone records with animal voices
10.7.8 Postage stamps with biological themes
10.7.9 Rubber stamps, prints, photograms
10.8 Statistical tables, graphs, diagrams 177
10.8.1 Maps
10.8.2 School bulletin boards, clippings from newspapers and periodicals, nature calendar 178

10.8.3 Textbooks, methodological handbooks 178
10.8.4 Teaching syllabi 180
10.8.5 Worksheets, workbooks, didactical tests, questionnaires, didactical cross-word puzzles, didactic games, etc. 181
10.8.6 Atlases, keys and punch cards to identify nature objects 185
10.8.7 Basic scientific literature, literature concerning the didactics of biology 186
10.8.8 Popular science literature and periodicals, school library
10.8.9 pupils´ notes 188
10.9 Instruments and devices for biology instruction
10.9.1 Instruments and devices for micro-organism cultures
10.9.2 Instruments and aids for experiments with natural objects, kymograph 190
10.9.3 Chemicals and indicators for experiments with natural objects
10.9.4 Measurement instruments
10.9.5 Instruments for creating images and reproducing sound, film projectors, episcopes, epidiascopes, slide projectors, overhead projectors, tape recorders, radio sets, phonographs, radio-phonographs, combined projection facilities, control panels
10.9.6 Optical instruments, magnifying glasses, mounting magnifiers, optical and electron microscopes,

exposure meters, cameras, stereo-microscopes
10.9.7 Instruction rooms and aid storage rooms /biology workrooms, biology laboratory, biology storage rooms/ 192
10.9.8 Micro-calculators, computers, micro-computers and teaching machines in biology instruction, information theory 193

11 Organizational forms in biology instruction

11.1 A survey of organizational forms, classification of organizational forms

11.2 Lessons of biology

11.2.1 Laboratory work 211
11.2.2 Practical exercises in biology, in ecology 212
11.2 Hobby clubs 213
11.2.4 Biology discussions 219
11.2.5 Organized out-of-school activities
11.2.6 Activities in a living-nature room or corner
11.2.7 Catch-up-with-the-class groups
11.2.8 Work on experimental school plots of land
11.2.9 Individual consultations and tutorials
11.3.1 Excursions, hiking camps, field work, outdoor school 220
11.3.2 Socially beneficial work, pupils' voluntary work 230
11.4 Biology Olympiades, biological competitions
11.5 Publication of a school magazine, school albums and bulletin boards
11.6 Homework projects

11.7 Work in a biology hobby club
11.8 Field work and summer science activities, scientific instruction trails
11.9 TV and Radio universities
11.9.1 Cooperational forms of biology instruction
11.9.2 Individual instruction
11.9.3 Instruction in pairs of pupils
11.9.4 Group instruction 239
11.9.5 Instruction in divisions

12 Planning biology instruction
12.1 Directions for drawing up plans for biology instruction and for individual topics
12.2 Teacher's preparation for instruction, for a lesson and for other organizational forms of biology instruction, the strategy of instruction
12.2.1 Teacher's preparation for botany instruction 242
12.2.2 Teacher's preparation for zoology instruction 255
12.2.3 Teacher's preparation for instruction in human biology 269
12.2.4 Teacher's preparation for instruction in general biology, genetics, ecology, molecular biology, ethology and in the history of biology
12.2.5 Teacher's preparation for instruction in environmental control 307

13 The outcome of biology instruction
13.1 Verification of the results of biology instruction, revision lessons, intensification, systemization

and structuralization of the subject-matter, surveys of the subject-matter 308
13.2 Assessment of the results of biology instruction 310
13.3 School-leaving examinations in biology
13.4 The outcome of biology competitions and of the creative work in the youth organization, pupils' projects in biology, students' scientific and professional activity 315
13.5 Examinations in biology

14 The biology teacher, outstanding biology teachers 316
14.1 The demands made on a biology teacher
14.2 Teacher training in normal, extramural and post-graduate courses at pedagogical faculties and science faculties, diploma works 317
14.2.1 Teaching practice, visiting classes of biology instruction
14.3 Teacher and his public activity, his work in the district pedagogical bodies, district subject advisers, school inspectors, school inspection
14.4 Doctor's degree in didactics of biology
14.5 Self-education of biology teachers 320
14.6 Pedagogical readings
14.7 Meetings, conferences, congresses and seminars concerning biology, meetings of experts in didactics of biology 320
14.8 Vocational guidance and the biology teacher
14.9 Outstanding biology teachers, deaths, anni- 325

19 THRU 39

versaries

15 Articles containing information about scientific biology, suitable for biology instruction
15.1 Botany
15.1.1 Palaeobotany
15.1.2 Fytogeography
15.2 Zoology, ethology
15.2.1 Palaeozoology
15.2.2 Zoogeography
15.3 Human biology 355
15.4 General biology, genetics, macromolecular biology, biochemistry, biophysics, bionomics 356
15.4.1 Ecology 356
15.4.2 Cybernetics
15.5 Medicine, medical service
15.6 Agriculture, agrotechnique
15.6.1 Hunting and gamekeeping, fishery, forestery
15.7 Agriculture, zootechnique
15.7.1 Microbiology
15.7.2 The history of biology
15.8 Outstanding scientists, anniversaries, deaths, outstanding experts in didactics of biology 357
15.8.1 Outstanding painters of biological objects
15.9 Science institutions, scientific corporations

16 Studies on nature conservation and environmental control

17 Studies on geology, mineralogy, petrography and

paedology suitable for biology instruction
17.1 Studies on other fields of natural science and mathematics related to biology
18 Studies on techniques and economics related to biology, biotechnology 359
ADDENDA 365

1 The didactics of biology as a scientific discipline

1.8 Periodicals of the didactics of biology

1. 40 Jahre im Dienste unserer Schule /40 years of service to our school/

   Biol. in der Sch., 34, 1985, No. 10, pp. 386-388.

   This contribution is devoted to the 40th anniversary of the foundation of the publishing house Volk und Wissen, which publishes among others the periodical Biologie in der Schule. It has also published many textbooks of pedagogy, of general and subjects didactics, textbooks of biology and teacher's handbooks. A special attention has been paid to methodical publications of biology instruction.

   didactics of biology, journal + didactics of biology, publishing house, anniversary, GDR - 147323.

2.1 The history of biology teaching and the didactics of biology in Czechoslovakia

2. HRABOVEC, I.:

   Biologické vedy v Trnave /K 350.výročiu založenia/ /Biological science in Trnava - to the 350th anniversary of the Trnava University/

   Vesmír, 64, 1985, No. 12, pp. 687-688. 3 photos

   The Trnava University was founded in 1635. From the second half of the 17th century "philosophia naturalis" was read here, botany and zoology in the middle of the 18th century. Biology was developed after the foundation of medical faculty in 1769. Its first professor of botany and chemistry was J.J. Winterl.

didactics of biology, history, university, Trnava, anniversary, Czechoslovakia - 147339

2.3 The history of biology teaching and the didactics of biology in other socialist countries

3. DIETRICH, G.:

Der Biologieunterricht in vierJahreszehnten nach unserer Befreiung /Biology instruction in the four decades after our liberation/

Biol. in der Sch., 34, 1985, No. 5, pp. 173-180. Lit. 5.

After the liberation, the main task of biology instruction was to overcome the conception based on falsified biological principles. The democratization process of our school begins with the issue of order No. 40 which meant to prepare new syllabi to September 15, 1945. They were to do away with nacist, militaristic and other reactionary theories in instruction. New unified syllabi came into effect on July 1st, 1946. It was for the first time in German history that all children were getting the same instruction based on the science of mathematics, biology, chemistry, physics and philology. With the existence of the GDR a new era begins for biology instruction with a new conception of biology didactics and with a link between biology instruction and the life of socialist society. New syllabi were realized between 1966 and 1971, they are still in operation.

didactics of biology, biology instruction, history + biology instruction, GDR - 147321.

4. GROTH, D. - GRÖNKE, O.:

Befreiung vom Faschismus - antifaschistisch-demokratische Schulreform - Neubeginn in unserem Fach /Liberation from fascism - the antifascist democratic school reform - a new beginning in our field/

Biol. in der Sch., 34, 1985, No. 5, pp. 169-173. Lit. 11.

Towards the end of World War II, Germany disposed of only 80 per cent of schools, yet the number of pupils rose by 100-150 per cent. The basic demand of fascist education was racism, militarism and agression. All these had to be overcome by a new school reform. An administrative basis of the building of a new school system was the order No. 40 from October 1, 1945, which meant - among other things - elaboration of a new content of biology instruction. There were problems with overcrowded classrooms, insufficient teaching aids and other means. Old teaching methods and verbalism prevailed. The elaboration of the democratic school act and the origin of the expert committee for biology instruction were a success. The first task of the committee was preparation of new syllabi and textbooks.

didactics of biology, biology instruction + history, GDR - 147321.

5. KÄSTNER, A.:

Wolfgang Ratke - biologischer Unterricht und schulbuchtheore-

tische Anfänge /W. Ratke - biology instruction and beginnings of the textbook theory/
Biol. in der Sch., 34, 1985, No. 9, pp. 341-343. Lit. 5.

On the eve of the 30 year war, Ratke came with his programme of democratic education, with the reform of instruction and teacher education. He also insisted on the building of universities devoted exclusively to teacher preparation. His ideas were further developed by A. Reyher, who contributed to the introduction of biology into schools. In the year 1672 biology instruction was introduced into elementary schools. Ratke's ideas concerning textbook theory have been in many ways accepted to this day.

didactics of biology, biology instruction + history,
GDR - 147321

3 Contemporary biology instruction and the didactics of biology abroad

6. STAVREVA, G. - APOSTOLOV, B.:
Otnosno realiziraneto na idejata za edinna kartina na prirodata v obučenieto po prirodoznanie v IV. klas /Realization of ideas of a unified image of nature in science instruction in the 4th class/
Biol. i Chim., 38, 1985, No. 1, pp. 29-33. Lit. 8, 2 fig.

First to fourth form science syllabi are being analyzed. The instruction in the first and second class concerns the native country, in the third and fourth class natural science.

The themes for the fourth class are being analyzed in detail.

didactics of biology, biology instruction, natural science, basic school, 1st to 4th class, Bulgaria - 147900.

7. CZAJA-TOPIŃSKA, J.:

Nauczyciele o nowym programie biologii dla kl. VIII. /Teachers about the new biology teaching syllabi for 8th class/

Biol. w Szk., 38, 1985, No. 1, pp. 22-26.

Basic-school teachers' experience is discussed, concerning their check-up of new experimental classes syllabi. Conditions for the realization of new teaching syllabi are spoken of, the content of instruction is assessed, as well as the possibilities of subject-matter organization, the necessity of modifications, the selection of suitable teaching methods, which elements of syllabi have not been realized and why, the results of pupils' work, corrections of pupils' work, frequent difficulties known to teachers and the difficulty of particular themes.

didactics of biology, biology instruction, experiment + teaching syllabi, experimental class, experimental school, 8th class, basic school, Poland - 147307.

3.1 Contemporary biology instruction and the didactics of biology in the foremost capitalist countries

8. BARDER, B. - JACKSON, D. - WILLIAMS, J.:

Primary Science Concepts

Teaching Sci. J., 3, 1985, No. 3, pp. 8-10. 5 tab.

Primary school syllabi are discussed. Live organisms are the subject-matter, and their interaction with environment, materials and their characteristics, energy and materials, power and their effect. Basic-school teachers are to say their word to the syllabi.

didactics of biology, biology instruction, natural science - teaching syllabi, basic school, Great Britain - 147307.

9. BICAK, CH. J.:

Agriculture and Biology: Complementary Perspectives in Science

The Amer. Biol. Teacher, 47, 1985, No. 2, pp. 81-84. Lit.7, 2 fig.

At present it is necessary to respect the interdisciplinary relations between agriculture as a teaching subject at universities. Ecology is especially important for agriculture, it is the starting point of the assessment of contemporary state of agricultural production in the world and of the ecologic problems which are important also for agricultural production. The connection with ecologic knowledge improves substantially the strategy of agriculture studies at universities.

didactics of biology, biology instruction, agriculture, ecology, ecosystem, university, interdisciplinary relations, USA - 147307.

10. CARRICK, T.:

A change in the emphasis on ecology in the biology curriculum: some effects of the GCSE

J. of Biol. Educ., 19, 1985, No. 2, pp. 101-102. Lit. 3, 1 fig., 1 tab.

Information on the prepared changes in secondary-school biology curriculum. Four themes are taught: the variety of organisms, relations between organisms and environment, organization of living nature and the individual, and the development of organisms and the continuity of life. Theme 2 receives more time and equals theme 3. The stress is on laboratory and field work.

didactics of biology, biology instruction, secondary school, teaching syllabi, ecology, USA - 147307.

11. JUNGCK, J.R.:

Perennial Polyculture, Permaculture and Preservation: The Principle of Diversity

The Amer. Biol. Teacher, 47, 1985, No. 2, pp. 72-75. Lit. 33, 1 fig.

The problems of agriculture belong to the most neglected in secondary-school and university teaching syllabi. Undergraduates are not interested in professions in agricultural production. The article stresses the significance of agricultural production in biology instruction. Successful results of the research in genetics can be seen in agricultural production. Ecologic criteria are widely accepted in agricultural research. It is necessary to introduce changes in education as far as nature conservation and environmental control and their relation to agriculture is concerned.

didactics of biology, biology instruction, agriculture, nature conservation and environmental control, teaching syllabi, secondary school, university, USA - 147307.

12. LOWE, I.:

STS: The future mode of Science education

The Aust. Sci. Teachers J., 31, 1985, No. 1, pp. 23-32. Lit. 27, 1 photo.

The author points to the possibilities of using the STS courses /= science, technique, society/ in secondary schools and universities. Since 1966 there has been a growing interest in the courses both in England and in Australia. The reasons for the popularity of these courses are discussed.

didactics of biology, biology instruction, teaching syllabi, natural sciences, social sciences, technique, Australia - 147307.

13. OSBORNE, R.:

Teachers of Science as educational researchers: The learning in Science projects

The Aust. Sci. Teachers J., 31, 1985, No 2, pp. 14-21. 3 fig.

Biology instruction and syllabi are often criticized and so is the research in instruction, which is often considered important for school practice. The researchers, however, do not often listen to teachers and their problems during instruction. Often the research does not even try to discover the reasons of school work problems, it does not follow experience of those teachers who devote their every day practice to educational and didactical research. The author points to some sorts of research and their results in Australia.

didactics of biology, biology instruction, teacher + biology, teaching syllabi, Australia - 147305.

14. Primary C.D.T.

Teaching Sci., 3, 1985, No. 1, p. 3. 1 fig.

C.D.T. means Craft Design Technology. This plan is included in the secondary-school syllabi. It is an important element of modernization in instruction. There is mentioned a list of specific pieces of knowledge, skills and habits which should be mastered by the pupils of secondary schools.

didactics of biology, biology instruction, secondary school, modernization, technology, teaching syllabi, Great Britain - 147307.

15. SHEA, CH.:

Relevance and Change in the Science Curriculum

The Aust. Sci. Teachers J., 31, 1985, No. 2, pp. 30-35. Lit. 7, 1 tab.

The article tries to solve the problems of science in the time of its rapid development and continuous changes. The modernization of the science curriculum presupposes its changes. The author tries to suggest possible changes concerning the role of the teacher, those concerning the teacher-pupil relation, those concerning organization of instruction, the state of pupils' knowledge and their wishes.

didactics of biology, biology instruction, natural science, social science, curriculum, modernization, Australia - 147307.

16. SHELLBERG, T.L.:

A New Course for a New Educational Niche

The Amer. Biol. Teacher, 47,1985, No. 5, pp. 275-280. Lit. 10, 1 photo.

Three years ago the author created a new Course for biology department of Henry Ford College, elaborating ethology in four week's lessons and stressing its genetic basis, its development items, chemical and neuro-mechanisms of behaviour, selection and evolution. The course has been enthusiastically received by the students.

didactics of biology, biology instruction, teaching syllabi, general biology, ethology, USA - 147307.

17. WANDERSEE, J.:

The Bugbear of Scientific Accuracy

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 392-393

The author points to teacher's possibilities to introduce to students of biology the foundations of science in a limited

51

number of lessons, having in mind the students of secondary schools. The teachers rely on textbooks, yet it is more suitable to teach pupils how to look for information on their own, independently. It is necessary to know that science is sometimes taught dogmatically and unscientifically. If absolute accuracy is required from the teacher, pupils suffocate in details. The students then close their studies rich in information, but poor in knowledge. According to Ausubel it is necessary to introduce the most general information covering the elements of knowledge and conception, and then to progressively differentiate single terms and specificity of science. It is not possible to make immediate scientists from beginners.

Didactics of biology, biology instruction, secondary school, university, teaching syllabi, terminology, USA - 147307.

18. WILLIAMS, J.:

Report to the Select Committee

Teaching Sci., 3, 1985, No. 1, pp. 7-9.

A report on a radical change in Science instruction in basic schools has been presented to School Natural Science Society, to the committee for education, science and arts. The report evaluates contemporary syllabi for basic schools, mentions imperfections and suggests necessary changes, analyzes demands and motivates them.

didactics of biology, biology instruction, basic school, teaching syllabi, Great Britain - 147307.

6.1 The forming of biological notions and terminology

19. **ALTMANN, A.:**

K pojmům užitkový, užitečný a škodlivý živočich /To the notions of utility, useful and harmful animal/
Přír. vědy ve šk., 36, 1984-1985, No. 4, p. 132.

The author expresses his views to critical remarks of some teachers concerning the following notions: serving for utility, useful and harmful animal. Classification of insects as harmful and useful is based on man's needs, and is as old as agriculture. It was accepted by the entomologists in the 18th century and has been kept since then. For didactical reasons it is necessary to divide correctly and to explain the notions useful, and serving for utility.

didactics of biology, biology instruction, terminology, zoology, basic school, 6th class, Czechoslovakia - 147319.

20. **AZENCOT, M.A.:**

Effects of a story-based strategy to enhance pupils' ability to read bio-technical texts
J. of Biol. Educ., 19, 1985, No. 1, pp. 63-66. Lit. 10, 2 fig., 1 tab.

Pupils find reading of bio-technical texts difficult. They prefer stories from biology. The author describes his research in the abilities to read a bio-technical text, in the understanding of terminology. On the basis of the results received he suggests certain conclusions for scientific texts in schools.

didactics of biology, biology instruction, technology, terminology, USA - 147319.

21. BUSCHENDORF, J.:
Zum Terminusversändnis im Biologieunterricht /To the understanding of terminology in biology instruction/
Biologie in der Sch., 34, 1985, No. 2/3, pp. 89-91.

Biology syllabi prescribe reception of biology terms and definitions. Aristotle differentiated real and nominal definitions, that is explanations of the meaning of the word, term denominated by the notion. The content of the notion is not defined, but the word is explained. Nominal definitions are divided into syntactic /these have no significance for biology instruction/ and semantic. Semantic definitions are classified into analytic and synthetic. To the analytic ones belong ascertaining definitions, to the synthetic ones defining definitions. Terms are words or compounds originating from mother tongue or a foreign language, or artificially formed expressions, the meaning and use of which is univocally defined by defining definitions.

didactics of biology, biology instruction, terminology, definition, teaching syllabi, GDR - 147319.

22. FINCH, I.:

Are eggs alive?

Teaching Sci., J. of the Sch., Natur. Sci. Soc., 3, 1985, No. 2, p. 9.

During instruction, teachers are to use exact terminology, to know the notions and their hierarchy. The author points to the problem of the notions animal and vertebrate. The notion egg is analyzed in detail. Pupils do not consider the egg of animals as something that is alive. Notions like born from egg and born alive are explained.

didactics of biology, biology instruction, zoology, terminology, sexual reproduction, egg, Great Britain - 147319.

23. GAYFORD, C.G.:

Water relations and the vacuolated plant cell: a brief study of the topic at advanced level in school biology

J. of Biol. Educ., 18, 1985, No. 2, pp. 151-155. Lit. 8, 3 fig., 3 tab.

Sixth-form pupils' understanding of the theme of the importance of water in plant cell is discussed. The results of this theme instruction are introduced. Partial comparison of results is carried out, concerning pupils who have been taught by means of the older terminology and those taught by means of the new terminology.

didactics of biology, biology instruction, botany, terminology, 6th class, research, Great Britain - 147319.

24. LAWSON, A.E. - HEGEBUSH, W.:

A Survey of Casual Hypothesis Testing Strategies: K - 12

The Amer. Biol. Teacher, 47, 1985, No. 6, pp. 348-355.

Lit. 23, 6 fig., 2 photos, 1 tab.

A general knowledge of meaning of biological information helps pupils build up their scientific rational abilities. The central question of science is how to explain the natural in causal terms. It is therefore necessary to teach pupils causal thinking and to master it by means of this instruction strategy. It enables pupils perfectly to join in the didactical and educational process. The authors elaborate problem instruction and the development of hypotheses for testing strategy, i.e. question, hypothesis, forecast, results, conclusions.

didactics of biology, biology instruction, terminology, strategy + instruction, USA - 147319.

25. RYAN, J.N.:

The Secret Language of Science or, Radicals in the Classroom

The Amer. Biol. Teacher, 47, 1985, No. 2, p. 91. Lit. 3.

A technical dictionary used at universities discovers the secret of the language of science, of biology, chemistry, physics, psychology and mathematics. It includes very specific terms. The conflict between scientific and special notions, and familiar notions must be solved to the benefit of scientific notions. The author explains how to use them. Some notions, however, have different meanings in different scientific fields. The author shows how to solve the relation between technical term and specific notion in individual science fields.

didactics of biology, biology instruction, university, terminology, natural science, technique, USA - 147319.

26. TOMAN, J.:

Inulin versus insulin

Živa, 33, 1985, No. 1, p. 4. 1 fig.

The notions inulin and insulin are explained and the formulae of inulin and insulin are compared. Insulin cannot be substituted by inulin.

didactics of biology, biology instruction, terminology, Czechoslovakia - 147319.

27. WANDERSEE, J.:

Are There Too Many Terms to Learn in Biology?

The Amer. Biol. Teacher, 47, 1985, No. 6, pp. 346-347. Lit. 6, 1 photo.

Biology as a science has its own binomic nomenclature and many terms from the Greek and Latin languages. The number of terms is a unique problem for those who begin their studies at universities. Similarly, biology terms are difficult also for students of secondary schools. A good strategy of instruction is to try to limit the number of new terms. It is necessary to limit the using of synonyms in biology. The author introduces an example of

27 various terms for one notion.

didactics of biology, biology instruction, terminology, synonymy, USA - 147319.

28. WOOD, P.:

Biology and chemical nomenclature

J. of Biol. Education, 18, 1984, No. 2, pp. 101-102. Lit. 6, 4 fig.

Biology today cannot do without chemical terminology. There are numerous relations between biology and chemistry, and many biological phenomena cannot be formulated without chemical formulas. For biology there is an obligatory acknowledged chemical nomenclature, in USA it is the norm of the Union of Pure and Applied Chemistry IUPAC. The author introduces some experience from biology instruction /Krebs cycle/, where organic molecules are often variously interpreted. It is therefore suitable for teachers and pupils to use the international chemical terminology and nomenclature and make mutual communication easier.

didactics of biology, biology instruction, chemistry instruction, biochemistry, terminology, Great Britain - 147319.

6.7 Guiding pupils towards the use of successful learning methods in biology. Activation of pupils. Self-control of pupils. Pupil interests

29. ANISIMOVA, V.S.:

O vozmožnostjach usilenija praktičeskoj napravlennosti pri obučenii školnikov anatomii, fiziologii i gigiene čeloveka /On possibilities of strengthening a practical course in anatomy, physiology and hygiene instruction/

Biol. v Šk., 59, 1985, No. 5, pp. 26-33. Lit. 6, 3 tab., 1 fig.

The reform of secondary school demands from teachers a more intensive attention to the strengthening of a practical course in instruction, connection of instruction with life and with agriculture and industry. It also demands practical skills and habits in human biology and hygiene. The article concentrates on the new conception of human biology instruction in 8th class of secondary schools of general education, on hygiene of productive work, on safety of work during instruction and excursions. Detail advices for teachers are included, they concern individual themes of human biology.

didactics of biology, biology instruction, human biology, hygiene, school of general education, 8th class, USSR - 147309.

30. MUNDT, R. - LERCHNER, W. - MÜHLIG,H.:

Möglichkeiten zur Aktivierung der Schüler bei der Behandlung des Naturschutzes /Possibilities of pupils´ activation during the instruction devoted to nature conservation/

Biol. in der Sch., 34, 1985, No. 2/3, pp. 94-96. 1 fig.

To the most important goals of instruction devoted to environmental conservation belongs the introduction of pupils to the facts and forming their convictions as far as nature conservation is concerned. Pupils' activities should be connected with individual independent work of five modes:

- research concerning environmental pollution
- research in the damages caused by environmental pollution
- demonstrations of means of nature protection
- research after a positive effect of the means of nature protection
- means of cooperation in nature conservation

The authors show how to solve the problems in facultative instruction.

didactics of biology, biology instruction, environmental control, nature conservation, activation + pupil, GDR = 147309.

31. KLAWITTER, E.:

Anwendbares Wissen undKönnen für alle Schüler /Applicable knowledge and skills for all pupils/

Biol. in der Sch., 34, 1985, No. 6, pp. 219-224. Lit. 3.

The preparation of young generation in the spirit of development of scientific and technical revolution demands that the pupils know how to use the acquired knowledge. This includes a complex of certain abilities which enable them to carry their knowledge into a new situation and get a new knowledge. It is necessary to motivate pupils correctly. Another possibility are tasks demanding application of information. The author introduces examples from biology instruction.

didactics of biology, biology instruction, activation + pupil, scientific and technical revolution, application + knowledge, motivation, GDR - 147309.

32. KOROTOV, V.M.:

O nekotorych uslovijach povyšenija effektivnosti uroka

/On some conditions of higher effectivity of instruction/

Biol. v Šk., 59, 1985, No. 6, pp. 17-21.

The Party and Government Decrees concerning higher effectivity of education and didacticy in the new model of instruction demand also a higher effectivity of the instruction period, the basic organizational form of instruction. Conditions enabling realization of these Decrees in schools in biology instruction are discussed. The article finds it necessary that pupils´ independent work is increased, that an end is made to their passivity, to overloading pupils with homework, and that pupils are introduced to a practical use of acquired knowledge. Independent active work of pupils makes rationalisation of teaching possible. It is demonstrated how some of the themes could be effectively prepared. It is also important to look after younf teachers and help them fulfill the decrees.

didactics of biology, biology instruction, activation + pupil, organizational form, teaching lesson, effectivity+

biology instruction, USSR - 147309.

33.KOVALEV, G.A.:

Obščenije i ličnosť v pedagogičeskom processe. /Po materialam statej opublikovanych v žurnale "Voprosy psychologii" za 1984 g./ /Contact and personality in pedagogical process. After studies published in the periodical / "Questions of Psychology" of 1984/

Biol. v Šk., 59, 1985, No. 5, pp. 16-23. Lit. 19.

The reform of the secondary school of general education in the USSR puts a number of important questions to psychology. One of them is the psychology of personality and contact, interrelation of personalities in the pedagogical process. A complexity of psychology and pedagogics, an educational contact are demanded. Inadequate personal relations between teachers and their pupils are criticized, the system school - pupil - teacher is paid attention to. Teachers should be well prepared in pedagogics and psychology.

Didactics of biology, biology instruction, educational process, personality + pupil, biology teacher, activity + pupil, USSR - 147309.

6.7.1 The study of causes of pupils' failure in biology, logical procedures

34. DILKINA, B.:

Sravnenieto v obučenieto po biologija v IV klas /Comparing

in biology instruction in the 6th class/
Biol. i Chim., 28, 1985, No. 1, pp. 19-24. Lit. 5, 4 tab.

The author stresses the importance of comparing as a logical procedure in biology instruction in the 6th class of the basic school. The article brings results of a research in the significance and effectivity of comparing in the 6th class. A systematic using of logical procedure of comparing substantially increases the effectivity of biology instruction and the results of it.

Didactics of biology, biology instruction, logical procedure, comparing method, basic school, 6th class, research, Bulgaria - 147313.

35. KOPPE, U.:
Geistige Tätigkeiten im Lernprocess der Schüler /Mental activity of pupils in the process of learning/
Biol. in der Sch., 34, 1985, No. 7/8, pp. 269-271.

The pupils´ ability to apply various forms of psychic activity in instruction has been increased. The author recommends - as a suitable means of their realization - to use written algorythms which are available. Various examples of such algorythms are introduced for various forms of activity: for comparing, defining, description, explanation, elucidation, reasoning an evaluating.

didactics of biology, biology instruction, logical operation, algorythms, learning + pupil, GDR - 147313.

6.7.4 Logical models in biology instruction, cybernetic models in biology instruction

36. LEONARD, W.H.:

A conceptual Model for the Study of Biomes

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 286-288. Lit. 3, 1 photo, 1 fig.

In secondary school biology also ecology is taught. The content of it includes occurrence of plants and animals on Earth, and biomes of the ice area, tundra, taiga, desert, bush, chaparal, savannah, rain forest are discussed. The author demonstrates preparation of models for these biomes and their use in classroom while the whole class is active.

didactics of biology, biology instruction, secondary school, ecology, biocenosis, model + logics, USA - 147313.

37. LITSCHE, G.:

Arbeit mit gedanklichen Modellen im Unterricht /Work with thought models in instruction/

Biol. in der Sch., 34, 1985, No. 7/8, pp. 262-266. Lit. 2, 7 fig.

There are two basic forms of models, theoretic /ideal, thought, mental/, and technical /"real", material, practical/. Theoretic models exist onlyin thoughts, which are expressed through words or other symbols. It is possible to look at them as at specific means of thinking, as at a "game with thoughts", as at a specific form of thinking. The first thought model used by its author in his work with pupils of 5th form, is the "thought zoological garden". Another one is the model of metabolism. These models are not the means of object teaching, because they operate with symbols. It is possible to draw them on the blackboard. Further on the author speaks about some anatomic models.

didactics of biology, biology instruction, model + logics, GDR - 147313.

38. LITSCHE, G.:

Problem orientierte Strukturierung des Bilologielehrganges - ein Problem /The structure of instruction orientated on problems - a problem/

Biol. in der Sch., 34, 1985, No. 12, pp. 457-462. Lit. 5.

The author recommends that the pupils themselves should actively look for problems in important parts of the matter of instruction.

didactics of biology, biology instruction, problem + logics, structure of instruction, GDR - 147315.

6.8 Scientific education in biology instruction

39. KVASIL, B.:

O potřebě porozumění /On the necessity of understanding/

Vesmír, 64, 1985, No. 1, pp. 5-6.

Society should utilize the output of scientific work as much as possible. The author contemplates the relation of wide public to science, scientists, scientific institutions and to all values represented by science. The Czechoslovak Academy of Science and the Slovak Science Academy create good preconditions for the development of science, witnessed by the great interest of industrial and agricultural enterprises. Yet there are some people who express an unhealthy and inadequate approach towards science.

didactics of biology, biology instruction, scientific education, Czechoslovakia - 147313.

6.8.1.1 Moral education

40. FAJKUS, B.:

Příspěvek didaktického výzkumu k utváření socialistického společenského vědomí /A contribution of didactic research to forming of socialist social consciousness/

Přír. vědy ve Šk., 37, 1984-1985, No. 4, pp. 122-124.

The author contemplates the contribution of didactic research to forming of social consciousness, which is worked out in sectional assignment VIII-6-6/3 "Modern mathematical-scientific education, conditions of its realization and of its effective function". It deals with the sphere of pedagogic and didactic operation, with the criteria of integration of mathematical and scientific education and with the contribution of didactic research.

didactics of biology, biology instruction, research, Czechoslovakia - 147313.

66 [illegible]

6.8.2 Atheistic education in biology instruction

41. **RADVAN, E.:**

Trvalá aktuálnost vědeckoateistické výchovy /The lasting topicality of the scientific atheistic education/ Komenský, 109, 1984-1985, No. 6, pp. 321-326.

The contemporary world witnesses a religious crisis, abolishing of economic and political power of the churches and religious sects, decrease of belief and religious emotions, scepsis towards religious dogmas, decrease of participation in church ceremonies, aversion to church authorities, and mass atheism. In our country there is religious freedom. But it is necessary to deepen all elements of communist education, to stress the worldview and atheist education because of the complicated international situation and of the conflicts between progressive and reactional powers. The churches try to modernize religion, and they participate in antisocialist propaganda. In suitable moments of instruction it is necessary to explain evolution of religious opinions, and through a wide atheistic activity to strengthen the basis of the scientific worldview.

didactics of biology, atheistic education, biology instruction, basic school, 1st grade, Czechoslovakia - 147313.

42. **SAUTKINA, F.N.:**

Časy ateističeskoj biologii /Lessons of atheist biology/

Biol. v Šk., 59, 1985, No. 5, p. 73.

The author demonstrates atheist education in biology instruction in 35 school in Gorky. The lessons of atheist education take place as obligatory instruction for all pupils after school. Interesting themes from botany and zoology are discussed, why people in old times worshipped some plants and animals, why atheists refuse the existence of a soul, how the invisible world of bacteries was discovered. Pupils ask questions, read additional literature, write short essays, consult with the teacher.

didactics of biology, biology instruction, atheistic education, basic school, USSR - 147313.

6.8.3 Education towards socialist patriotism and proletarian internationalism in biology instruction

43. ELAGIN, I.N.:

Učenyje VASCHNIL v godu Velkoj otečestvennoj vojny /The scientists of the Academy of Agricultural Sciences in the years of the Great Patriotic War/
Biol. v Šk., 58, 1985, No. 2, pp. 22-26.

The activity of the VASCHNIL in the years of World War II and their contribution to the victory are discussed.

didactics of biology, biology instruction, education towards socialist patriotism, Great Patriotic War, USSR - 147313.

44. KRIVOBOKOVA, S.S.:

Vklad sovetskich biologov i medicinskich rabotnikov v Pobedu /The contribution of the Soviet biologists and medical workers to the victory/

Biol. v Šk., 59, 1985, No. 2, pp. 15-22. Lit. 16.

The article is about the contribution of biologists and medical workers to the victory in the Great Patriotic War. The examples are suitable for zoology and human biology instruction in basic and secondary schools. They are suitable also for the education towards socialist patriotism.

didactics of biology, biology instruction, education towards socialist patriotism, biologic sciences, medical sciences, Great Patriotic War, USSR - 147313.

45. LÖTHER, R.:

Biologie und Faschismus /Biology and Fascism/

Biol. in der Sch., 34, 1985, No. 9, pp. 343-348. Lit.12.

On the occasion of the 40th anniversary of the victory over fascism, the author contemplates the basic fascist crimes. It was above all the idea of the "pure gentile race" and the effort of genocide of nations and nationalities /Gypsies, Jews, Slavs/. Biology was to serve the reasoning of these crimes. The author deals with ideologic aspects of the betrayal of science and then goes over to the problems of "racial hygiene", the deformity of which he elucidates by a number of quantitative data.

didactics of biology, biology instruction, education towards socialist patriotism, fascism, GDR - 147313.

46. 40-letije Velikoj Pobedy /40 years from the Great Victory/
Biol. v Šk., 1985, No. 2, pp. 3-5.

The editorial discusses the 40th anniversary of the victory in the Great Patriotic War. Materials are suitable for patriotic education in biology instruction in basic and secondary schools.

didactics of biology, biology instruction, education towards socialist patriotism, basic school, secondary school, USSR - 147313.

47. ŠABALINA, E.A.:
Kak ja ispolzuju na urokach biologii material iz istorii Velikoj Otečestvennoj vojny /How I use materials from the Great Patriotic War in biology instruction/
Biol. v Šk., 59, 1985, No. 2, pp. 29-32.

The author tells about her own experience of patriotic education in biology instruction. She makes use of the materials from the Great Patriotic War.

didactics of biology, biology instruction, education towards socialist patriotism, USSR - 147313.

48. VOLODIN, S.:
Podvig prodolžajetsja /Heroism continues/
Biol. v Šk., 59, 1985, No. 2, pp. 52-57.

Teachers were fighting on the fronts of the Great

70

Patriotic War. Today their fight continues: they struggle for modernization of the Soviet school, they educate young generations in the spirit of the Communist society. The article is suited for patriotic education, education towards proletarian internationalism and for education to peace in basic and secondary schools.

didactics of biology, biology instruction, education towards socialist patriotism, modernization + biology instruction, USSR - 147313.

6.8.3.1 Education to peace

49. PAUCKE, H.:

Krieg und Wettrüsten sind Todfeinde der Menschheit und ihrer Umwelt /Wars and hectic armaments are deadly enemies of mankind and of the environment/
Biol. in der Sch., 34, 1985, No. 1, pp. 1-8.

Thanks to the peace policy of the socialist countries, Europe has been living in the longest period of peace in her history. But the agressive imperialist circles have provoked more than 150 wars in the last 40 years. On our planet mankind has witnessed 14 500 wars and in them about 4 milliards of people have lost their lives. The author dicusses the effects of conventional wars on environment /World War I, World War II, the war between Iran and Iraq/, and ecologic consequences of the American agression in Vietnam. He analyses possible effects of nuclear wars on nature /fall of temperature, damage of ecologic balance, etc./ and discusses the possibility of misuse of natural powers for war purposes /influencing weather/.

didactics of biology, biology instruction, education to peace, GDR - 147313.

50. TERESIAK, M.:

Den Krieg bekämpfen, bevor er begonnen hat! /Fight against war before it begins!/

Biol. in der Sch., 34, 1985, No. 7/8, pp. 257-261. Lit. 3.

It is a contribution to the World Day of Peace on September 1, 1985, when the whole world celebrated the 40th anniversary of the victory over Hitler fascism. The author brings some documents of the enormous losses during World War II, and then he discusses peace initiative of the socialist countries. He criticizes the militaristic policy of the western countries, especially the U.S.A.

didactics of biology, biology instruction, education to peace, GDR - 147313.

6.8.4 Labour education in biology instruction

51. FILATOVA, L.I.:

Ulyčšat idejno-političeskoje, trudovoje, mravstvennoje vospitanije školnikov/to improve political, labour- and moral education of pupils/

Biol. v Šk., 59, 1985, No. 2, pp. 5-8.

The author writes about the problems of labour- and polytechnical education of pupils and about moral education. She takes the Party and Government Decrees from 1984 and demonstrates their use in biology instruction in schools of general education.

didactics of biology, biology instruction, communist education, labour education, moral education, school of general education, USSR - 147313.

52. ISAKOVA, I.S.:

Naučit školnikov truditsja /To teach pupils physical work/ Biol. v Šk., 59, No. 6, pp. 65-68.

A child must learn to speak before 5 years of age, otherwise it does not speak at all, and the pupil must learn to work in pre-school and school age, otherwise he cannot find a correct attitude towards labour later. Biology instruction has many possibilities for developing labour education, especially on the experimental school plot of land. The author teaches in a boarding school and she describes her work with her pupils on the school land, growing of greenery around the school building, excursions, the work in hot houses, hot beds, etc.

didactics of biology, biology instruction, work on plot of land, labour education, boarding school, USSR - 147313.

53. ISMAGAMBETOVA, M.S.:

Trudovoje vospitanije školnikov naše obščeje delo /Labour education of pupils is our common work/

Biol. v Šk., 59, 1985, No. 2, pp. 60-65.

The article is devoted to the problems of labour education in the first year of school reform in USSR. First year experience shows how important labour education is in schools of general education. Labour education is successful where there are possibilities to work in agricultural and industrial enterprises and scientific institutions.

didactics of biology, biology instruction, school of general education, USSR - 147313.

54. KRISCHKE, N.

Eine Tierart stirbt aus. Informationen zum Rückgang der Flussperlmuschel - Ursachen und Gegenmassnahmen /A species is dying. In formation on the retreat of the river pearl oyster. Causes and precautions/
Unterr. Biol., 9, 1985, No. 102, pp. 50-51. Lit. 7, 1 information sheet.

The contemporary state of the population of the river pearl-oyster is described, its distribution, biology, development and protective measures to save this species. Ecologists care more for the protection of mammals and birds, and forget the invertebrates. Pollution disturbs the reproducing cycle of the river pearl-oyster. The author pays attention to protective measures and to the possibility of biology instruction in saving this species.

didactics of biology, biology instruction, nature conservation, environmental control, molluscs, FRG - 147313.

55. KUZNECOVA, L.V.:

Vospityvat grazdanina socialističeskogo obščestva /To educate a citizen of socialist country/

Biol. v Škol., 59, 1985, No. 5, pp. 3-8.

Contemporary assignment of the development of the Soviet society concerns economy, scientific and technical progress, and agricultural and industrial production. There are assignments concerning defence of the country and improvement of all sides of life. An important factor has been the development of personality. The importance of school increases, there are higher demands for education. It is necessary to bring up citizens responsible for their actions, active people, fighters for a faster building up of socialism. Schoolwork therefore must be more effective.

didactics of biology, biology instruction, labour education, communist education, USSR - 147413.

56. LAVROVA, I.S. - TEBIS, N.M.:

Iz opyta po oznakomleniju školnikov s Prodovolstvennoj programmoj SSSR /Experiences of introducing the Food Production Programme of the USSR/

Biol. s Šk., 59, 1985, No. 4, pp. 31-37.

In agreement with the programme of polytechnical education, biology teachers discuss with their pupils the Food Production Programme of the USSR for the time up to 1990, and the Party and Government Decrees concerning the Programme. Included is a long-time programme of melioration and of the use of meliorated soils, development of vegetable and animal production, development of microbiology, fodder production, increase of soil fertility; further assignments include genetics, selection. These assignments are divided by the authors into theme complexes of biology, botany, zoology, general biology, etc. Materials are for biology teachers of 9th and 10th forms, first term.

didactics of biology, biology instruction, polytechnical education, food production, agriculture, secondary school, 9th-10th class, USSR - 147313.

57. LUCKAJA,I.M.:

Učeniskije proizvodstvennyje brigady - dejstvennaja forma trudovogo vospitanija školnikov /Pupil labour brigades - an active form of labour education/

Biol. v Šk., 59, 1985, pp. 65-69.

The time before the Congress is suitable for a deep analysis of the acquired results of the improvement of education concerning the new reform of the school of general education in USSR. Pedagogical effect of labour brigades is evaluated, work of young scientists, technicians, pioneers and pupils. The results of individual pupils labour teams are given.

didactics of biology, biology instruction, labour education, brigade + pupil, USSR - 147313.

58. KALINIČENKO, N.A.:

Nastavniki - nadežnyje pomoščniki učitelej /Educational advisers - reliable helpers of teachers/

Biol. v Škol., 59, 1985, No. 6, pp. 64-65.

The contemporary school reform in USSR has to secure improvement of labour education and professional orientation. In this the educational advisers help both the teachers and their pupils. The advisers are selected from highly qualified teachers who have a communist attitude to work, who are proud of the working class and possess high moral qualities. They also help pupils in vocation choice.

didactics of biology, biology instruction, labour education, professional education, vocational guidance, biology teacher, USSR - 147313.

59. MÜLLER, A. - WINDELBAND, A.:

Beispiele für Bezüge zu Wissenschaft, Technik und Produktion in Klasse 6 /Examples of the attitudes towards science, technique and production in 6th form/

Biol. in der Sch., 34, 1985, No. 4, pp. [illegible], Lit.6.

In instruction it is necessary to respect the principle of the connection of school with life and practice. The authors introduce several practical examples from their instruction to make their theoretical presumptions concrete, like forest as a source of raw materials. Every instruction unit begins with the formulation of the educational goal. There follow suggestions how to provoke a problem situation and how to organize a lesson.

didactics of biology, biology instruction, labour education, problem method, problem instruction, basic school, 6th form, GDR - 147313.

60. Položenije o bazovom predprijatii obščeobrazovatelnoj školy /Decree concerning base enterprises for schools of general education/
Biol. v Šk., 59, 1985, No. 1, pp. 8-9.

The Soviet of ministers of USSR passed an issue on base enterprises belonging to schools and creating a possibility of labour education and professional orientation of pupils. There are given the duties of the enterprise concerning pupils preparation in polytechnical education, labour education, and professional orientation, and the cooperation of the school and the enterprise. Given are also the duties of the school towards the enterprise. The decree helps schools to master assignments of labour education and professional orientation of Soviet students.

didactics of biology, biology instruction, labour education, professional education, school of general education, USSR - 147313.

61. SAJDAJEV, N.Š.:
Vesti iz škol /Reports from schools/
Biol. v Šk., 59, 1985, No. 1, p. 54.

The author informs about bread saving action in his school. The action has been joined by biology teachers, history teachers, teachers of labour education and literature. They organize talks with Heroes of Work and talks on suitable themes connected with corn production and bread saving.

didactics og biology, biology instruction, labour education, USSR - 147313.

62. SMOLIN, I.I.:

Trudovaja zakalka učaščichsja našej školy /Pupils of our school are hardened to labour/

Biol. v Šk., 59, 1985, No. 3, pp. 57-61. 1 photo.

A basic demand of today is the improvement of young people´s attitude towards labour - labour education. Labour education in schools is connected with professional orientation of pupils. Biology instruction has its role in this, especially in agricultural production and in pupils´ work on school plots of land. The author informs about his experience, about his educational activity and the results of it.

didactics of biology, biology instruction, labour education, professional education, USSR - 147313.

63. Trudovoj ritm pjatiletki /Labour rythm of the five-year plan/

Biol. v Šk., 59, 1985, No. 2, pp. 27-28.

In the closing year of the 11th five-year plan in USSR informations are given about the reached results in individual branches of national economy, in agriculture and industry, about the revenue, results of the progress of science, technique, education and culture, medical care, nature conservation and environmental control. The data are suited for biology instruction.

didactics of biology, biology instruction, labour education, polytechnical education, education towards socialist patriotism, USSR - 147313.

64. *Vospityvat truženikov* /To bring up good workers/
Biol v Šk., 59, 1985, No. 1, pp. 1-7.

The editorial deals with the problems of labour education in schools of general education. It informs about the results of the last but one year of 11th five-year plan in labour education of pupils, and stresses its growing importance for next years of new assignments.

didactics of biology, biology instruction, labour education, schools of general education, USSR - 147313.

65. *Vremennyj perečeň professij po kotorym organizujetsja podgotovka učaščichsja v obščiobrazovatelnych školach* /A contemporary survey of professions for which the schools of general education organize preparation of pupils/
Biol. v Šk., 59, 1985, No. 1, pp. 52-54. 1 tab.

An official survey of professions has been prepared for schools and teachers-advisers for choice of vocation. Labour education and teaching syllabi of the schools of general education enable pupils to receive approbation in given professions.

didactics of biology, biology instruction, labour education, professional orientation, vocational guidance, school of general education, USSR - 147313.

6.8.5 Polytechnical education in biology instruction

66. KOMISSAROV, B.D. - CHRYPOVA, R.A.:
Odin iz putej realizacii politechničeskoj napravlennosti obučenija /One of the ways of polytechnical streaming of instruction/
Biol. v Šk., 59, 1985, No. 5, pp. 33-38. 2 fig., 6 tab.

Polytechnical knowledge of biology in schools of general education includes knowledge of microbiology. The authors deal - among other things - with microorganisms, their significance, with bacteries and fungi causing plant- , animal- and human diseases. They discuss also those bacteries and fungi, which are unusually important in national economy, in the production of fodder, vitamins, antibiotics, ferments, etc. They are used in pharmaceutical industry. This matter is the content of several themes in biology instruction. Individual themes are briefly described.

didactics of biology, biology instruction, polytechnical education, microbiology, school of general education, USSR - 147313.

67. TRAJTAK, I. - POLJAKOV, V.A.:

Ob usilenije politechničeskoj napravlennosti obučenija biologii /To intensify polytechnical content of biology instruction/

Biol. v Šk., 59, 1985, No. 1, pp. 30-35.

The reform of biology instruction wishes to intensify polytechnical education in biology instruction. It means greater attention paid to practical and laboratory work, technology, interdisciplinary relations of biology-chemistry-physics and other sciences which may participate in professional orientation of pupils of schools of general education. The authors select themes to show possibilities of polytechnical education in biology instruction.

didactics of biology, biology instruction, polytechnical education, school of general education, USSR - 147313.

6.8.6 Aesthetical education in biology instruction

68. CANOVA, J.:

Formirane na estetičesko otnošenije kam prirodata /Forming of aesthetic attitude towards nature/

Biol. i Chim., 28, 1985, No. 4, pp. 37-40. 1 tab.

Aesthetic education is connected with the school life, with labour education and professional orientation. The article demonstrates the attitude of aesthetic education towards a harmonious and manysided development of pupil´s personality, to forming of socialist morals. There are great tasks in this field for biology teachers. Possibilities are shown for biology in the 5th to 7th class of basic school. The author introduces theoretical possibilities and practical experience of aesthetis education. She adds results of research concerning aesthetic attitude of pupils /240/ towards nature.

didactics of biology, biology instruction, research, Bulgaria - 147313.

69. DUCHÁČ, V.:
Význam a potřeba estetické výchovy při výuce biologie na středních školách /The significance and necessity of aesthetic education in secondary school biology instruction/
Social. šk., 25, 1984-1985, No.5, pp. 210-213.

Aesthetic education has today become a teaching subject of secondary schools. The author shows possibilities of aesthetic education in biology instruction in both technical and general education type of schools.

didactics of biology, biology instruction, aesthetic education, secondary school, technical school, Czechoslovakia - 147313.

70. TRAUTMANN, H. - TRAUTMANN, T.:
Zur ästhetischen Erziehung im Biologieunterricht /On aesthetic education in biology instruction/
Biol. in der Sch., 14, 1985, No.11, p. 428.

The task of biology instruction concerning education in aesthetics is not only to choose suitable means of instruction /illustrations, etc./, but also developing of aesthetic criteria for all sides of life. There are many forms to gain this goal, one of it is demonstrated on the example of observing a squirrel.

didactics of biology, biology instruction, aesthetic education, GDR - 147313.

6.8.7 Education towards nature conservation and environmental control in biology instruction

71. A Classroom Bird Table for Young Children by May Hollings

Teaching Sci., 3, 1985, No. 1, pp.

Nature interest and nature control increases the use of bird tables and observing birds on them. The article shows how to use bird tables and watch birds in 1st grade forms. It includes advices concerning the right food, how to examine and characterize birds, and how to draw them. It is recommended to begin an autumn and continue throughout the whole winter.

didactics of biology, biology instruction, 1st grade, method of instruction, observing, feeding + animal, Great Britain - 147313.

72. BADE, L.:

Ethische Aspekte des Naturschutzes /Ethic aspects of nature conservation/

Unterr. Biol., 9, 1985, No. 108, pp. 37-40. Lit. 6, 1 questionaire, 1 working sheet.

A theme concerning the importance of nature conservation is prepared and divided into individual lessons. The acts protecting nature are often evaded and this is explained as the necessity of technical progress. As a basis of instruction the author prepares questions: what rights has man when compared with his creative work, what aspects belong to ethic qualities of life. She recommends the film Sons of the Earth, stresses basic rules of ethics, of responsibility towards nature, and points to correct behaviour of man in nature. In her instruction she also uses an extract from literature and poetry every time.

didactics of biology, biology instruction, environmental control, aesthetic education, interdisciplinary relationships, literature, poetry, FRG - 147313.

73. BALTUS, J.:

Japonské národní parky /National Parks in Japan/

Živa, 33, 1985, No. 1, pp.18-19. 2 photos.

Nature in Japan is protected by an Act from 1931. Nature conservation is controled by the Government. Japan has 27 national parks covering 37.5 million hectares, which represents 5.3 per cent of total area of Japan. Beside national parks there exist areas comparable to our protected regional areas. They serve as protective zones for national parks and are actually used for recreation of gigantic industrial regions. The third type of protected areas are the prefectural ones. There are 291 of them. Contemporary state of the protected areas is described.

didactics of biology, biology instruction, nature conservation, Japan, Czechoslovakia - 147313.

74. BÉDUE, J.:
Project d'action educative pour une education a l'environement en quatrieme /Project of an educational action for the education of environmental control/
Biol. - Geol., 85, 1985, No. 2, pp. 281-289.

The project was fullfilled by pupils of the 4th form of the secondary school in the forest in Buthiers in 1982-83. The pupils worked there, observed the soil, vegetation, occurrence of plant and animal species. They also worked in the swamps of Buthiers oú Sophie and in Malesherbes. The results are described.

didactics of biology, biology instruction, organizational form, work on the grounds, education to environmental control, nature conservation, biocenosis, forest, swamp, France - 147313.

75. BÍLÝ, S.:
Ohrožené druhy brouků /Endangered beetle species/
ABC mladých Tech. a přírodovědců, 20, 1984-1985, No. 5, pp. 5-6. 1 fig. inset.

The author describes endangered species of beetles in Czechoslovakia.

didactics of biology, biology instruction, nature conservation, insect, Czechoslovakia - 147313.

76. BISCHOFF, B.:

Torfnutzung gefährdet die Moore /Exploitation of turf endangers turf-bogs/

Unterr. Biol., 9, 1985, No. 109, pp.34-38. Lit. 12, 2 fig., 2 worksheets.

A theme dealing with exploitation of turf and its consequences is being prepared for instruction. Lack of oxygen prevents full decomposition of organic stuff in turf-bogs. Every year, turf-bog grows by 1mm. The pupils investigate qualities of turf and its use. It is necessary to look for substitutes which could be used in gardening. Humus can be obtained from treebark, mulch from tree bark and weeds.

didactics of biology, biology instruction, nature conservation, laboratory work, method of instruction, observing, experiment, turf-bog, secondary school, 9th - 10th class, FRG - 147313.

77. BREHM, K.:

Die Wiederbelebung von Hochmoorresten /Revival of the remnants of highland turf-bogs/

Unterr. Biol., 9, 1985, No. 109, pp. 48-49.

The author contemplates the possible rescue of highland turf-bogs. He works out their water balance, vegetation, man's interference, burning out, using insecticides, etc. The author suggests the means which could revive them.

didactics of biology, biology instruction, education to nature conservation, environmental control, turf-bogs, FRG - 147313.

78. BUSCHENDORF, J.:

Die neue "Artenschutzbestimmung" und ihre Konsequenzen für den Biologielehrer /Determining new protected species and the consequences for biology teacher/

Biol. in der Sch., 34, 1985, No. 6, pp. 214-218. Lit. 17.

The Act from August 8, 1954, was the first to protect natural environment in GDR. In 1955 there 239 species of vertebrates, 206 species of invertebrates and 80 species of plants protected by law in GDR. In 1970 a new Act was passed to protect endangered species. Since 1984 a new decree has been in action. It differentiates 4 categories of protected species. The author mentions the number of plants and animals in all categories and examples of protected species, as well as the means by which to include them in instruction.

didactics of biology, biology instruction, nature conservation, GDR - 147313.

79. Cygnus olor

Véda a tech. mládeži, 39,1985, No. 2, p. 3. 2 photos.

Every year Cygnus olor appears in great numbers in Czechoslovakia, in winter time also rarely Cygnus cygnus, and very exceptionally Cygnus bewickii. The contribution describes the causes of this population explosion in the country. Every year, about 600 to 650 pairs of the big swan /Cygnus olor/ nest. After they have brought out their young, the number rises to 6 500 swans. On the Vltava river in Prague there are about 700 swans. The largest number of them can be found in the middle-Bohemian region. Cases are described, when hunting of swans was fined 18 000 Kčs, and the offender was expelled from the hunting and gamekeeping union.

didactics of biology, biology instruction, nature conservation, birds, Czechoslovakia - 147313.

80. ČERNÝ, K.:

Vymírající obyvatel písčin a stepí /A dying inhabitant of sandbanks and steppes/

Živa, 33, 1985, No.1, p.26.

The endangered and dying species of night butterfly, Ammobita festiva HUNF, is described, the occurrence in historical time and today. It occurs on sandy and stony hillsides, and has a one-year development. The caterpillar hibernates, pupates in April, and the butterfly comes out end June.

didactics of biology, biology instruction, nature conservation, insect, Czechoslovakia - 147313.

81. ČEŘOVSKÝ, J.:

Nejohroženější rostliny světa /The most endangered plants of the world/

Věda a Tech. mládeži, 39, 1985, No.6, p.20. 1 photo.

The most endangered plants are named: Saintpaulia ionantha, Ceratozamia hildae, Paphiopedilum druryi, Rafflesia arnoldii, Persea theobromifolia, Coraeauxia edulis, Hibiscus insularis, Argyroxiphium keuerne, Ariocarpus agavoides, and Cupressus dupreziana.

didactics of biology, biology instruction, nature conservation, plant + protection, Czechoslovakia - 147313.

82. ČEŘOVSKÝ, J.:

Nejohroženější zvířata světa /The most endangered animals of the world/

Věda a Tech. mládeži, 39, 1985, No. 5, pp. 26-27. 3 photos.

After UNESCO information, the most endangered animal species of the world are Crasseonycteris thouglongyai, Bos sauveli, Monachus monachus, Brachyteles arachnoides, Sus salvanius, Ceratotherium simum cottoni, Didermoceros sumatrensis, Rhynochetos jubatus, Geochelone yniphora, Crocodylus intermedius,and a slug of genus Achatinella.

didactics of biology, biology instruction, nature conservation, animal + nature conservation, UNESCO, Czechoslovakia - 147313.

83. DOBRECOVA, N.V.:

Organizacija praktičeskich del po ochrane prirody v pionerskom lagere /Organization of work for nature conservation in children pioneer camps/

Biol. v Šk., 59, 1985, No. 3, pp. 64-66.

Education in schools of general education is not possible without practical work of pupils for nature protection. The author describes how the pupils join in protectional labours in pioneer summer camps.

didactics of biology, biology instruction, nature conservation, environmental control, work on the grounds, camp, USSR - 147313.

84. EHRENSBERGER, R.:

Entscheidungen im Naturschutz. Eine Umwelttausschuss-Sitzung als Rollenspiel /Decisions concerning nature conservation. Meeting of the committee for environmental control as a play serving instruction of biology/
Unterr. Biol., 9, 1985, No. 108, pp. 33-36. Lit. 6, 2 photos.

Through cleaning, damming and paving of rivers and creeks, and by draining of wet areas, many animals lose their environment. Protection of these areas, however, does not find understanding with private owners of land. Often even political interests form obstacles in FRG. The author has created a didactic play in which pupils take different roles. Meeting of the committee deals with melioration of a creek. Pupils are motivated for arguments of dealing persons /president of the committee, farmer, president of the union of waterbuilding, worker entrusted with public nature protection/. The progress of the lesson and the play is described.

didactics of biology, biology instruction, nature conservation, didactic play, FRG - 147313.

85. FELDMANN, R.:

Einheimische Reptilien - Bestand, Gefährdung und Schutz
Our reptiles - state, endangering and protection/

Unterr. Biol., 9, 1985, No. 108, pp. 20-22. Lit. 6, 2 fig., 1 tab.

For biology instruction the author prepares problems of reptiles occurring in FRG, their contemporary state, endangering and possibilities of their protection and saving. In FRG there live 12 species of reptiles, 5 of which are endangered and dying out, 2 other species are intensively endangered or endangered. A special attention is paid to those living in warm localities of south German vinyards. They are in danger of dying out because of the cleaning and modernization of vinyards and using insecticides. This problem is discussed with pupils in biology instruction.

didactics of biology, biology instruction, nature conservation, reptiles, FRG - 147313.

86. GÉNOT, J.C.:

"Pluies acides" et mort des Forets /Acid rains and the dying away of the forests/

Biol. - Geol., 85, 1985, No. 2, pp. 339-347. Lit.14, 3 fig.

A contemporary state and history of forests in France and the causes of their dying away are described. The main cause is the acid rain, which is the result of pollution of air through industry, heating and traffic. The question is what to do: to fight the symptoms, or the causes of the dying away?

didactics of biology, biology instruction, education, education, education + nature conservation, atmosphere pollution, France - 147313.

87. GOČEVA, S.:

Izgraždane na otgovorno otnošenije u učenicite kam okolnata sreda kato iztočnik na osnovni rastitelni surovini /Forming of a responsible attitude of pupils towards environment as the source of basic vegetable raw materials/

Biol. i Chim., 28, 1985, No. 2, pp. 44-47.

In all lessons of biology the teacher has to motivate pupils towards a responsible attitude to environment. Plants give man food, they are the material for medicament production, etc. The author analyses a theme for instruction and suggests didactic procedures.

didactics of biology, biology instruction, botany, plant, raw material, Bulgaria - 147313.

88. GOTTSCHLICH,G - SCHEDLER,J.:

Moore als Archive der Waldgeschichte /Turf-bogs as archives of forest history/

Unterr. Biol., 9, 1985, No. 109, pp. 31-33. Lit.6, 2 fig., 2 worksheets, 1 tab.

The author describes the instruction model for secondary grade I. The worksheet and samples of turf enable laboratory finding out of pollen of those plants which grew around the turf area in the time of its origin. Pollen grains are drawn in the worksheet. In this way pupils are acquainted with the possibility of determination of species of aerogamous trees by the building of pollen grains.

didactics of biology, biology instruction, laboratory work, turf-bogs, forest, FRG - 147313.

89. HÁJKOVÁ, A.:

Prales Mionší /Primeval Forest of Mionší/

Věda a Tech. mládeži, 39, 1985, No. 12, p. 3. 3 photos.

Primeval forest of Mionší is described. It is situated in the Beskydy Mountains on the mount Mionší. It is a State National Reserve. A possible excursion with pupils is suggested and described.

didactics of biology, biology instruction, nature conservation, reserve, forest, Czechoslovakia - 147313.

90. HOMOLA, J.:

Škodlivý účinek hluku /A damaging effect of noise/

Přír. vědy ve Šk., 36, 1984-1985, No. 6, p. 214.

Noise effects are damaging for the nervous system, they can bring neurosis, digestion and sleep disorders, dicreasing activity, headaches and dicreased concentration. Human organism does not have any protecting mechanisms against noise. The theme is suitable for biology instruction.

didactics of biology, biology instruction, environmental control, human biology, Czechoslovakia - 147313.

91. JANEK, J.:

O ochrane životního prostredia v škole /On the protection of environment and school/

Komenský, 109, 1984-1985, No. 8, pp. 470-472.

Petr Jilemnicky Basic School in Jura near Bratislava planted 3 000 rose bushes within one year, took part in a 2 week summer camp and gave 1 020 hours of voluntary work at the building of a new school building. The results of the work of the methodical association are given. A talk on environmental control and its application in biology instruction in individual forms of the school are described.

didactics of biology, biology instruction, basic school, generally useful work, nature conservation, environmental control, Czechoslovakia - 147313.

92. JANSSEN, W.:

Der Schläfer im Moor /The sleeper in turf-bog/

Unterr. Biol., 9, 1985, No. 109, pp. 18-20. Lit. 7, 2 photos, 1 information sheet.

At the beginning of a large-scale exploitation of turf in 18th century, human bodies were found in turf. The dead bodies were preserved in the acid wet environment without oxygen. They were perfectly conserved. In instruction, pupils are informed about the history of a sleeper found in turf in Denmark. The body is 2 000 years old. There were 166 bodies found in turf in Denmark, 69 in Schleswig-Holstein, 141 in Lower Saxony and Brehmen, 5 in Hamburgh, 48 in Holland, 75 in England, 9 in Norway, 16 in Sweden. Most of the dead bodies so found come from north-west Europe. The age of the bodies is found out with the help of pollen analysis and the radioactive element C^{14}. The conditions of conservation are also mentioned.

didactics of biology, biology instruction, history + man, FRG - 147313.

93. KAČÍREK, A.:

Využití školní přírodní rezervace /The use of a school natural reserve/

Přír. vědy ve Šk., 36, 1984-1985, No. 10, p. 369.

The so-called protected reserves give a new possibility of nature conservation in the Czech Socialist Republic. They are smaller areas of land, interesting for their flora and fauna. They serve as localities of observing, experiments and research. The author informs about one of these reserves used for insect protection.

didactics of biology, biology instruction, nature conservation, reserve, insect, Czechoslovakia - 147313.

94. Kh:

Chráněné a ohrožení savci v ČSSR /Protected and endangered mammals in Czechoslovakia/

ABC mladých Tech. a přírodovědců, 20, 1984-1985, No. 24, pp. 13-14, 1 photo, 1 fig., 1 tab.

The development of our fauna including the endangered mammals /European mink, European beaver, river otter, mountain goat, north bat, mountain marmot, etc./ is examined.

didactics of biology, biology, instruction, nature conservation, mammals, Czechoslovakia - 147313.

95. KLAUTKE, S.:

Beeinflussung von Organismen durch Schwermetalle /Endangering of organisms through heavy metals/

Unterr. Biol., 9, 1985, No. 105, pp. 42-46. Lit. 12, 2 worksheets, 2 tab.

A topical problem of environmental control is the encumbrance of the environment through heavy metals. The author speaks about the occurrence and consequences of the effect of individual heavy metals in the environment. For school practice he recommends to examine effects of heavy metals on the fermentation process of yeast fungi. The experiment can be carried out also only in a test-tube. Further experiments are described, limits for heavy metals are given for drinking water, and symptoms of diseases caused by an overdose of heavy metals are mentioned.

didactics of biology, biology instruction, human biology, environmental control, metal, toxicity, FRG - 147313.

96. KLEINSCHMIDT, V.:

Broschüren, Merkblätter und Poster zum Arten- und Biotopschutz /Pamphlets, picture sheets in loose cover, posters for protection of plant and animal species/

Unterr. Biol., 9, 1985, No. 108, pp. 49-50.

Various kinds of literature and aids concerning the protection of plants, animals and biotops is introduced and recommended for biology instruction.

didactics of biology, biology instruction, nature conservation, environmental control, literature, picture, FRG - 147313.

97. KOVANDA, M.:

Aby nebylo pozdě /It could be late/

Živa, 33, 1985, No. 6, pp. 233-234.

The Czech flora has been rapidly changing recently, everywhere primitive and ubiquitous species progress, and plants with special ecologic demands retreat. It is the consequence of unbalancing of biotops, of industrial emissions, water pollution, chemistry in agriculture, traffic development, technical progress. Some examples of liquidation of some flower species are described.

didactics of biology, biology instruction, nature conservation, protection + plant, Czechoslovakia - 147313.

98. KULHÁNKOVÁ, Z.:

Naše zkušenosti s výchovou k péči o životní prostředí /Our experience with education towards environmental control/

Přír. vědy ve Šk., 36, 1985, No. 3, p. 90.

The author, a biology teacher at Jihlava, gives her experience in education towards environmental control. Her pupils are active during out-of-school time, they take part in biology Olympiads, they measure the amount of fall-down, they participate in talks on environmental control.

didactics of biology, biology instruction, environmental control, education + nature conservation, Czechoslovakia - 147313.

99. KŮS, E. :

Červená kniha RSFSR /The Red Book of the RSFSR/

ABC mladých Tech. a přírodovědců, 29, 1984 - 1985, No.5, p. 7. 38 fig.

The international union of nature and natural sources conservation UICN gives data about endangered species in the Red Book. It is an international book. It appeared in USSR in 1978 and 1983. It categorizes endangered species into 5 groups. It includes 65 species and subspecies of mammals, 109 species of birds, 11 species of reptiles, 4 species of amphibians, 9 species of fish, 11 species of lampreys, and 34 species of insect.

didactics of biology, biology instruction, protection + animal, USSR - 147313.

100. LAMMERT, F.D.:

Das Niedermoor /Lowland turf-bogs/

Unterr. Biol., 9, 1985, No. 109, pp. 46-47. Lit. 5, 6 fig.

Lowland turf-bogs in FRG, their origin, conditions and contemporary state are discussed. These turf-bogs develop on wet grounds. The author shows the problems of the environment of these localities and the conflicts between ecologists, farmers and holidaying people.

didactics og biology, biology instruction, nature conservation, turf-bogs, Czechoslovakia - 147313.

101. **LAMMERT, F.D.:**

Moore und Naturschutz /Turf-bogs and nature conservation/
Unterr. Biol., 9, 1985, No. 109, pp. 11-14. Lit. 33, 1 fig., 1 tab.

From 250 species of plants occurring in the turf-bogs in FRG, 142 are included in the Red Book of FRG. Turf localities are endangered through melioration, through exploiting of turf and using of the area around turf-bogs as holidaying places. The motto of modern protection of nature is restoration of nature and regeneration. The author explains these notions.

didactics of biology, biology instruction, nature conservation, turf-bog, FRG - 147313.

102. LAMMERT, F.D. - PEPPLER, C.:

Kein Platz mehr für Moore? /No more room for turf?/
Unterr. Biol., 9, 1985, No. 109, pp. 23-30. 27 photos, 6 fig.

This contribution is a picture book with many coloured photographs and with brief descriptions of mentioned plants and animals. The author contemplates questions related to contemporary state and possibilities of preserving turf both in lowland and highland.

didactics of biology, biology instruction, nature conservation, turf, FRG - 147313.

103. LAŠTŮVKA, Z.:

K problematice ochrany fauny bezobratlých se zřetelem k denním motýlům /To the problems of protection of invertebrates, especially day butterflies/

Živa, 33,1985, č. 1,pp. 2-3.

The inconsiderate exploitation of environment leads to disappearing of plants and animals and to the necessity of their protection. Among invertebrates the most endangered are butterflies. The article deals with protection of butterflies.

didactics of biology, biology instruction, protection + animal, insect, Czechoslovakia - 147313.

104. LINKOV, A.B.:

Beloščekaja kazarka /Barnacle goose/

Biol. v Šk., 59, 1985, No. 5, pp. 24-25.

The author describes barnacle goose, its rare occurrence in USSR. It also appears in northern areas like Greenland. It is kept in some zoological gardens and is included in the Red Book of USSR. Through protection in the localities of nesting, the number of barnacle goose has risen.

didactics of biology, biology instruction, nature conservation, birds, USSR - 147313.

105. MACHÁČKOVÁ, J.:

Komu se nelení, tomu se zelení /Greenery as a result of man's industry/

Věda a Tech. mládeži, 39, 1985, No. 6, p. 7. 3 fig.

Greenery is important - it subdues noise, enriches the air by oxygen, has a positive effect on man. The author discusses what trees to plant and grow, how to look after lawns and flower beds. Suitable for biology teacher.

didactics of biology, biology instruction, environmental control, greenery, Czechoslovakia - 147313.

106. MJ:

Boj o ochranu mokřin /Struggle for protection of wet grounds/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 13, pp. 4-5. 3 photos.

The significance of swamps and wet grounds is the theme of the article. Swamps and wet grounds belong to the most productive areas of Earth. The soil is extraordinarily fertile, swamp plants are useful. These localities are also an important supply of water. It is necessary to protect them.

didactics of biology, biology instruction, ecosystem, swamp, Czechoslovakia - 147313.

107. MÜLLER, P.:

Umweltchemikalien in Nahrungsketten /Chemicals from environment in foodchains/

Der math. und naturwissenschaftliche Unterr., 38, 1985, No. 5, pp. 257-275.

Some environmental chemicals act negatively even if only in trace doses. Their origin is manifold. They come mostly from various processes of production. They can damage enzymatic systems of organisms already in trace concentrations. Modern analysis enables the control of these chemicals in foodchains.

didactics of biology, biology instruction, environmental control, chemicals, FRG - 147313.

108. NIEKISCH, M.:

Schützt Ufer und Küsten - Europaratskampagne 1983/84 /Protect river banks and coasts - campaign of the European Council 1983-84/

Der. math. und naturwissenschaftliche Unterr., 38, 1985, No. 4, pp. 193 - 198. Lit. 28.

The European Council for the year 1983-84 started a protection campaign concerning river banks and coasts. The article brings a survey of the results of this action: it has informed the public about the state of banks and coasts, about the ways of endangering and about possibilities of protection and saving of endangered plant and animal species.

didactics of biology, biology instruction, nature conservation, river, sea, swamp, FRG - 147313.

109. Ochrana našich plazů /Protection of our reptiles/

ABC mladých Tech. a přírodovědců, 29, 1985, No 16, pp.6-7. 3 photos.

Reptiles need protection, especially towards the end of April. Almost all our reptiles are protected by law, except coluber and viper which also need protection.

didactics of biology, biology instruction, nature conservation, reptiles, Czechoslovakia - 147313.

110. OLIVA, O.:

Několik poznámek o vlivu člověka na ryby /Some remarks on the influence of man on fish/

Živa, 33, 1985, No. 1, p. 30.

The influence of man on the environment of fish is growing. Waters are polluted, they become sewers full of chemical waste and of dirt from households and industry. The author brings data about gradual disappearance of individual species of fish from our rivers.

didactics of biology, biology instruction, nature conservation, water pollution, fish, Czechoslovakia - 147313.

111. PATOČKA, K.:

Jak vytvářet u žáků ekologické vědomí?/How to form pupils´ ecological consciousness/

Komenský, 109, 1984-1985, No. 7, pp. 390-393.

The author has in mind pupils of the first grade of basic schools and their sensitiveness towards environment. Ecologic consciousness is a part of new ethics, and it should be developed in a child since 1st form of the basic school.

didactics of biology, biology instruction, instruction + natural science, basic school, 1st grade, environmental control, ecology, Czechoslovakia - 147313.

112. PLESNÍK, J. - DUSÍK, M.:

Pomůžeme poštolkám, poštolky pomohou nám /We shall help kestrels, kestrels will help us/

Věda a Tech. mládeži, 39, 1985, No. 9, pp. 26-27.

Chemistry in modern agriculture damages the balance in nature and therefore an integrated protection of plants is used today, as biologic struggle. Rodents are destroyed by birds of prey and by owls. Significant destroyers of small rodents are Falco tinnunculus, Buteo buteo, Asio otus, Tyto alba and Strix aluco. It is important to protect birds of prey and owls.

didactics of biology, biology instruction, nature conservation, mammals, birds, Czechoslovakia - 147313.

113. POKORNÝ, M.:

Taky krmíte ptáčky? /Do you also feed birds?/

Věda a Tech. mládeži, 39, 1985, No. 23, p. 21. 1 photo.

The author informs about correct and natural bird feeding in winter and about proper time of feeding.

didacticy of biology, biology instruction, nature conservation, birds, fodder, Czechoslovakia - 147313.

114. POKORNÝ, M.:

Městští holubi /Town pigeons/

Věda a Tech. mládeži, 39, 1985, No. 1, pp. 26-27.

Town pigeons are descendants of the rocky pigeon. In Prague there were between 120 000 and 140 000 pigeons in autumn 1984. They have become a hygienic problem of the town. They are bearers and source of contagious diseases, they damage agricultural land around cities and towns. The author suggests possible ways of their regulation.

didactics of biology, biology instruction, nature conservation, birds, Czechoslovakia 147313.

115. RATTEY, F.:

Erziehungsintensive Gestaltung des Themas "Rationelle Nutzung und Schutz der Gewässer" /Educationally effective conception of the theme "Rational using and protection of waters"/

Biol. in der Sch., 34, 1985, No. 2/3, pp. 55-60.

Lit. 9.

Biology instruction also means education towards environmental control. Pupils should be acquainted with problems connected with water protection. The author analyses biology syllabi and recommends themes in which it is suitable to point to these problems.

didactics of biology, biology instruction, environmental control, water pollution, GDR - 147313.

116. SMRČEK, M.:

Zelený klenot /The green jewel/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No.23, p. 7. 1 photo, 1 map.

Biology and the occurrence of the protected green lizard /Lacerta viridis/ in Czechoslovakia is described. It occurs in middle Bohemia, South Moravia and South Slovakia.

didactics of biology, biology instruction, nature conservation, reptiles, Czechoslovakia - 147313.

117. SOMOGYI, J.:

Bobor pri Bratislave /Beaver near Bratislava/

Živa, 33,1985, No. 6, p. 234.

There are trees gnawed by beavers on the banks of the Danube between Rusovce and Bratislava. The author has seen the beaver, found its droppings and lair. He adds a photograph. The beaver is probably a young one from the colonies in FRG and Austria, where this animal has been successfully introduced.

didactics of biology, biology instruction, nature conservation, protection + animal, mammals, Czechoslovakia - 147313.

118. STICHMANN, W.:

Naturschutz /Nature conservation/

Unterr. Biol., 9, 1985, No. 108, pp. 4-13. Lit. 60, 9 fig., 1 tab.

The author introduces the goals of nature conservation and distinguishes it from other ecologic programmes. He gives examples of protection of organism species and suggests how to include themes from nature conservation into school instruction. He adds list of articles from didactical periodicals of FRG.

didactics of biology, biology instruction, instructional goal, FRG - 147313.

119. STICHMANN, W.:

Schutz unserer Ackerwildkräuter /Protection of our field weeds/

Unterr. Biol., 1985, 9, No. 108, pp. 27-30. 10 photos, 42 fig., 1 tab.

Even field weeds are endangered through chemistry and mechanization of agricultural production. The author shows how these weeds could be protected before extinction: it is enough if a strip of land at the fieldside is left free from herbicides. The weeds are classified and their importance at determining the quality of soil is mentioned.

didactics of biology, biology instruction, nature conservation, conservation + plant, culturcoenosis, FRG- 147313.

120. STONE, C.L.:

When "Conservation" Became "Ecology"

The Amer. Biol. Teacher, 47, 1985, No. 2., pp. 85-90.
Lit. 22, 1 photo.

The author analyses American textbooks since 1900 and shows the gradual change of the contents from the anthropocentric to the ecocentric. It is a very interesting comparison bringing a rich bibliography, showing why there are changes in the content of instruction.

didactics of biology, biology instruction, textbook, environmental control, USA - 147313.

121. Sýkorčí jídelny /Tables for tits/
ABC mladých Tech. a přírodovědců, 29, 1984-198 , No.10, pp. 6-7. 5 fig.

Various forms of bird tables are described, especially for tits: a small net with tallow and berries, flower pot with some fat with nuts and seeds, etc.

didactics of biology, biology instruction, nature conservation, fodder, generally profitable work, Czechoslovakia - 147313.

122. SZYNDLER, A.:
Na ratunek plazom /To save reptiles/
Biol. w Szk., 38, 1985, No. 2, p. 119. 4 photos.

A new communication has been build in Warsaw, leading over an oasis of greenery called Zoliborz. Three quarters of it disappeared. Students from 16th secondary school /"gymnasium"/ in Warsaw helped fish out all amphibians and carry them into a reserve.

didactics of biology, biology instruction, nature conservation, conservation + animal, amphibians, Poland - 147313

123. ŠKOUDLÍN, J.:

Poslední svého druhu /The last of the species/

ABC maldých Tecn. a přírodovědců, 29, 1984-1985, No. 4, pp. 24-25.

The author speaks about the last specimen of migrant pigeon, which died in 1914 in the zoological garden of Cincinnati, at the age of 29. In the 40´ of the last century this pigeon formed 40 per cent of American bird population.

didactics of biology, biology instruction, nature conservation, conservation + bird, USA - 147313.

124. TICHONOVA, N.E.:

V.I.Lenin i promlemy ochrany prirody /V.I. Lenin and the problems of nature conservation/

Biol. s Šk., 58, 1985, No. 2, pp. 9-14.

Lenin was extremely interested in nature and its conservation. His orientation in nature conservation and a rational use of its ricnes is an excellent example of a complex approach to the question. Lenin´s decisions concerning the Soviet nature conservation and natural sources are mentioned. It is a valuable material for biology instruction.

didactics of biology, biology instruction, V.I. Lenin, USSR - 147313.

110

125. VERFÜRTH, M.:

Jugendarbeit im Naturschutz. Ein Bericht über eine ausserschulische Initiative /Youth working in nature conservation. A report on an out-of-school initiative/ Unterr. Biol., 9, 1985, No. 103, pp. 58-59. Lit. 4, 6 photos.

The author brings documents on out-of-school work of a youth group in Porz in nature conservation. They work on the regeneration of wet grounds. The progress of the action is described including dealing with authorities and the public, and results of the action are mentioned.

didactics of biology, biology instruction, nature conservation, socially profitable work, FRG - 147313.

126. VIERHAUS, H.:

Schutz für die bedrohten Fledermäuse. Berichte über die aktuelle Situation und Unterrichtsempfehlungen /Protection for endangered bats. Reports on the present situation and recommendations for school instruction/ Biol. Unterr., 9, 1985, No. 108, pp. 46-48. Lit. 6, 2 photos, 1 fig.

All kinds of bats in the FRG are protected by law. They are listed in the Red Book of FRG. The causes of the falling of their number are various, mostly come out from the way of bats´ life. As insecteating mammals they need hunting regions rich in insects, and summer and winter hiding places. The author describes their way of life, their food and possible protection.

didactics of biology, biology instruction, nature conservation, mammals, FRG - 147313.

127. WEINITSCHKE, H.:

15 Jahre Gesetz zur planmässigen Entwicklung der socialistischen Landeskultur in der DDR - Ergebnisse und Aufgaben /15 years of the planned socialist nature conservation in GDR - results and tasks/

Biol. in der Sch., 34, 1985, No. 7/8, pp. 299-303. 8 photo supplements.

By the issue of the act for nature conservation, foundations have been formed determining man's relation towards nature under new social conditions. The goal is directed towards improving of the working and living conditions of people. The author notices the development of the landscape. He analyses the principle of a manysided use of the country, recultivation, and tasks for special conservation of nature.

didactics of biology, biology instruction, nature conservation, GDR - 147313.

6.8.8 Health care education in biology instruction

128. BARMAN, Ch.R.:

Nutrition Education: An Essential Ingredient of Biology Education

The Amer. Biol. Teacher, 47, 1985, No. 6, pp. 333-339. Lit. 11, 7 tab.

Nutrition education is included in syllabi of human biology. Its elements are taught also in other subjects. In biology there is a new revolutionary conception of correct nutrition, information on basic kinds of food and their importance for man. The author demonstrates an active attitude of pupils when this problem is being taught. The pupil chooses a diet and gives reasons for it. He makes use of the tables of caloric values and content of vitamins. Also personal weight and its sways are taken into account. Kitchen salt in larger amount in food participates in the rising of blood pressure.

didactics of biology, biology instruction, caloric value of food, vitamins, USA - 147313.

129. GROPENGIESSER, H.:
Gesunde Schule /Healtny school/
Unterr. Biol., 9, 1985, No. 106, pp. 4-14. Lit. 51, 7 fig., 2 tab.

Leading article to the theme concerning problems of health care education in schools. Knowledge about health care and pupils' attitudes have to influence not only them, but also their parents.

didactics of biology, biology instruction , health care education, FRG - 147313.

130. HORÁK, V.:
Mléko, jaké jsi /Milk, what are you like?/
Věda a Tech. mládeži, 39, 1985, No. 23, pp. 10-11.3 fig.

Milk is the basic food of man and an important raw material of food industry. Tolerated losses at milk production are as high as 25 per cent. Troubles are with polluted milk and with plastic containers. The quality of production and of milk is very impoetant. Means of milk control are described.

didactics of biology, biology instruction, human biology, health care education, milk, food industry, Czechoslovakia - 147313.

131. HEINDL, I. - STEPHANBLOME, G.:

Gemeinsames Pausenfrühstück im Klassenraum /Collective snack in the classroom/

Unterr. Biol., 9, 1985, No. 106, pp. 20-23. Lit. 14, 2 worksheet, 2 tab.

The authors introduce a model instruction, the theme of which is snack in the classroom during interval of the 6th form. The snack gives the child energy for physical and mental activity at school. Research in FRG shows that some children do not bring any snack at all, a great number of them bring only sweets. Pupils are led to a correct composition of food. Already the first breakfast must contain proteins. Pupils prepare a correct set of food for snack.

didactics of biology, biology instruction, health care education, 1st-6th class, caloric value of food, FRG - 147313.

132. KOLESOV, D.V.:

Alkogol-narkotičeskoje veščestvo /Alcohol and narcotics/

Biol. v Šk., 59, 1985, No. 6, pp. 13-16.

A part of health care education is anti-alcoholic education. The author speaks about the influence of alcohol on man, about alcoholism and its grades, about harmfulness of alcohol, about its influence on central nervous system, organs and tissue, about teetotalism.

didactics of biology, biology instruction, antialcoholic education, USSR - 147313.

133. KINNER, B. and coll.:

Gesunde Lebensführung und Ältern /A healthy life style and growing old/

Biol. in der Sch., 34, 1985, No. 6, pp. 248-252.

Gerontology is an interdisciplinary science with tendency to integrate and differentiate. The task of the biology of growing old, to find out the relation between the processes of growing old, investigate different age specificities, and to find the means of life prolongation. The authors analyse causes of growing old, which are endogenous /the influence of heredity, sex, etc./ and exogenous /for example the influence of profession, diseases, climate/. They mark also various ways of adaptation and analyse the consequences of it for life style in older age. Finally, they recommend physical activity and sports.

didactics of biology, biology instruction, health care education, gerontology, human biology, GDR - 147313.

134. KETZ, H.A.:

Gesunde Ernährung in Schulalter /Healthy nutrition in school age/

Biol. in der Sch., 34, 1985, No. 10, pp. 388-393.

Principles of healthy and rational nutrition are preconditions of normal growth and harmonious physical and psychical development of children. Individual specificities are conditions of the amount of accepted food, the quantity of food and its correct values. It is necessary to develop right habits of eating, the right relation between the quantity of accepted food and physical weight and relation between the accepted quantity of suger and tooth decay. In biology instruction it should not be forgotten to educate children and young people towards correct and rational nutrition.

didactics of biology, biology instruction, health care education, caloric value of food, GDR - 147313.

135. KLEMANOVÁ, Ž.:

Výchova hygienických poznatkov a návykov v prvouke ve 2.ročníku /Education towards knowledge of hygienic information and habits in primary education in 2nd form/

Komenský, 109, 1984-1985, No. 2, pp. 88-91.

It is an open lesson of the theme Vegetables, fruit and fruit trees, where health care education finds its application. Cooperative form of instruction, group instruction, pair instruction and independent work are made use of.

didactics of biology, biology instruction, health care education, Czechoslovakia - 147313.

136. NIKOLAJEV, V.R.:

Fizkultura kak faktor ukreplenija zdorovja /Physical education as a health establishing factor/

Biol. v Šk., 59, No. 5, 1985, pp. 53-58. Lit. 5.

Physical education enables a harmonious development of young people and establishes man´s health. This fact must be made use of in biology instruction. Before a time, 94 per cent of all energy in production was produced in man´s muscles, today only 1 per cent. It is therefore important to go for sports and recreation to establish one´s health. The author demonstrates a dialogue on the theme during instruction.

didactics of biology, biology instruction, physical education, physical training, USSR - 147313.

137. NIKOLAJEV, V.R.:

O faktorach, ukrepljajuščich zdorovie i faktorach, oslabjajuščich ego. /Factors establishing health and factors damaging health/

Biol. v Šk., 59, 1985, No. 4, pp. 43-50.

The author discusses the task of hygiene in the preparation of young generation. Young people must get basic hygienic knowledge, skills and habits. Biology instruction takes ovet the important assignments. Individual elements of hygiene education are analysed. A special attention is paid to healthy nutrition.

didactics of biology, biology instruction, health care education, hygiene, USSR - 147313.

138. Pasívní kouření nekuřáků /Passive smoking of non-smokers/
Věda a Tech. mládeži, 39, 1985, No. 18, p. 13, 2 photos.

Smoker's lungs are an excellent filter, they keep as much as 90 per cent of solid carbon dioxide. Endangered health of both smokers and non-smokers, when they work together, is described.

didactics of biology, biology instruction, smoking, Czechoslovakia - 147313.

139. TRAFIMOVA, G.V.:
Iz opyta raboty po antialkogolnomu vospitaniju školnikov na urokacn biologii v VIII klasse /Experience with antialcoholic education of pupils in biology instruction in 8th form/
Biol. v Šk., 59, 1985, No. 5, pp. 42-45. Lit. 10.

A part of health care education is education against alcoholism. The author describes her experience with it in human biology instruction in 8th form. She suggests suitable dates for it and homework.

didactics of biology, biology instruction, human biology, health care education, alcoholism, USSR - 147313.

140. VENER, A.M. - KRZPKA, L.R.:

Needed: More Attention to Weight Control Knowledge

The Amer. Biol. Teacher, 47, 1985, No. 3, pp. 148-153.

Lit. 36, 2 photos, 1 tab.

The authors discuss problems of right nutrition, obesity and weight control. They describe some diseases which are the consequences of incorrect nutrition. They also inform about results of a research of physical weight of 620 persons.

didactics of biology, biology instruction, caloric value of food, disease, USA - 147313.

141. VOROBJEV, V.I.:

O kulture pitanija /On the culture of nutrition/

Biol. v Šk., 59, 1985, No. 1, pp. 17-23. 4 tab.

The author writes about principles of correct nutrition, which means rational nutrition, regular taking of meals, thinking of caloric value of food and food composition, a necessary quantity of vitamins. A special attention is paid to nutrition of youth.

didactics of biology, biology instruction, food, vitamins, USSR - 147313.

6.8.9 Sex education in biology instruction

142. BACH, K.R.:

Aktuelle Informationen über sexuell übertragbare Krank-

heiten /Topical information on sexually contagious diseases/
Biol. in der Sch., 34, 1985, No. 10, pp. 393-396.

The growth of the number of V.D., which began in the sixties, goes on. Except traditional veneral diseases there exist many others. There are 15 of them and they effect especially young groups of population. The author characterizes AIDS, which is characteristic of the incorrigible damage of cellular immunity system leading to death. A virus is the originator and it is transferred mainly by sexual contact. At present there are 7 000 cases registered in USA, 267 in Europe. Among ill persons prevail homosexuals, but often also drug addicts are effected. In GDR there are no cases.

didactics of biology, biology instruction, sexual education, disease, GDR - 147313.

143. BACH, K.R.:
Homosexualität - Gesellschaft - Sexualerziehung /Homosexuality - society - sexual education/
Biol. in der Sch., 34, 1985, NO. 12, pp. 486-492. Lit.17.

There are about 5 per cent homosexuals in human society, in GDR live about 750.000 of them. Homosexuality is not a disease, it is a solid part of personality, which does not have anything in common with sexual deviations. Homosexuals often have artistic and easthetic interests. The author analyses the relation between homosexuality and society. There exist various hypotheses concerning the origin of homosexuality - genetic factors, specific constellation of parents in early childhood. As a suitable form of information on homosexuality the author suggests a discussion to the point.

didactics of biology, biology instruction, human biology, sexual education, homosexuality, GDR - 147313.

144. CHADŽINOV, K.A.:

Iz opyta raboty po polovomu prosveščeniju i vospitaniju školnikov /Experience of sexual education of pupils/
Biol. v Škol., 59, 1985, No. 5, pp. 45-49. Lit. 10.

Sexual education belongs to biology instruction, to botany, zoology, human biology and also general biology. The author selects themes for 5th to 10th forms, where elements of sexual education apply.

didactics of biology, biology instruction, botany, zoology, human biology, general biology, sexual education, 5th to 10th class, USSR - 147313.

145. NOVÁČEK, J.:

Předmanželská výchova na středních školách /Pre-marital education in secondary schools/
Přír. vědy ve Šk., 36, 1984-1985, No.8, pp.291-292.

Family is the main educational environment for the pre-marital education of children. In their family children get the first information and example of marriage life; sometimes, though, they also see some unhealthy things. The author dicusses the goals of pre-marital education of pupils between 15 to 17 years of age on the basis of a methodical pamphlet of ministry of medical care in the Czech Socialist Republic.

didactics of biology, biology instruction, family education, secondary school, 1st-3rd class, Czechoslovakia - 147313.

7.1.3 Problem teaching, project teaching

146. KITANOVA, K.V.:

Razvitije na tvorčeskite sposobnosti na učenicite črez izpolzuvane na problemen podchod pri izučavane na temata "dichibridno i polichibridno krastovane" - X klas /Development of creative abilities by means of using problem form of teaching, theme dihybrid and polyhybrid cross-breeding - 10th form/

Biol. i Chim., 28, 1985, No. 4, pp. 15-18.

The author shows the possibility of activation of pupils in 10th form, in the theme Dihybrid and polyhybrid cross-breeding. Differentiation instruction and problem instruction secures a higher pupils' interest in Mendel laws of heredity. Instruction uses special tables of heredity.

didactics of biology, biology instruction, genetics, problem education, secondary school, 10th class, Bulgaria - 147307

147. STREITZ, K.:

Zur Arbeit mit Problemstellungen /On work with formulating problems/

Biol. in der Sch., 34, 1985, No. 10, pp. 382-383.

From his own practical experience the author brings two examples of problem education. They are related to nourishment of autotrophic plants /9th form/ and to man's phylogenesis /10th form/. The author analyses the initial situation, the way of creating a problem situation and progress of the solving by pupils.

didactics of biology, biology instruction, problem education, secondary school, 9th-10th form, GDR - 147307.

148. JÄKEL, W.:

Einige Gedanken zur historischen Betrachtungsweise in Klasse 8 - Thema Immunisierung /Some suggestions to historical approach to the theme"immunization"/

Biol. in der Sch., 34, 1985, No. 11, pp. 426-427.

The author suggests certain changes in the structure of the theme - against recommendation of methodical pamphlet. He begins with the stating of the problem and starts from the historical method to the problems of active and passive immunization. In detail he deals with the process of instruction.

didactics of biology, biology instruction, historical method, human biology, immunity, 8th class, basic school, GDR - 147307.

7.3 Dividing teaching subject-matter into various classes. The principles of ordering the subject-matter into a didactical system. Differentiation in biology instruction

149. WONG, O.K.:

Teaching biology to Limited English Proficient Students
The Amer. Biol. Teacher, 47, 1985, No. 8, pp.473-477.
Lit. 7, 2 fig., 1 photo.

Teaching biology to L.E.P. students needs a different strategy of instruction than teaching normal students. In countries with national minorities, in large schools, the problem is solved by means of temporary classes of two-language instruction; in small schools it is not possible. The author describes his own experience with these students and demonstrates his work on the theme "Submicroscopic building of the cell".

didactics of biology, biology instruction, strategy + instruction, cell, language skill, English, USA - 147313.

150. HEINZEL, I.:

Leistungsermittlung mit differenzierten Aufgaben in Klasse 5 /Finding out results of learning in 5th form by means of differentiated tasks/

Biol. in der Sch., 34, 1985, No. 10, pp. 368-371. 2 fig.

One of the preconditions of effective instruction is the knowledge of the efficiency of pupils. To find out, it is suitable to give them differentiated learning assignments. The author characterizes them on two examples,'on swallowing an egg by a snake and on lizard's and frog's behaviour in the sun. A special attention is paid to the deduction of causal relations.

didactics of biology, biology instruction, differentiated instruction, basic school, 5th form, GDR - 147307.

7.6 The study of existing biology curricula and teaching syllabi

151. BÁLINT, L.:

K novej koncepcii vyučovania prírodných predmetov na gymnáziu /To the new conception of natural science instruction in schools of general education/
Přír. vědy ve Šk., 36, 1984-1985, No. 1, pp. 2-3.

The new conception of chemistry, geography and biology instruction in secondary schools of general education /gymnasium/ corresponds with the scientific and technical development of production, worldview education and the contemporary society's demands on the education of young generation. The content of instruction has been reduced and there are changes in didactical approach. The syllabi include new demands on teacher and pupil, on the means of instruction, on educational and didactic goals.

didactics of biology, biology instruction, chemistry, physics, modernization, teaching syllabi, gymnasium, Czechoslovakia - 147307.

152. FREJLAK, S.:

Jak przezwyciężać aktualne trudności w realizacji programów nauczania biologii /How to overcome topical difficulties in fulfilling biology instruction syllabi/

Biol. w Szk., 38, 1985, 1985, No. 2, pp. 67-70.Lit. 13.

The second part of the article deals with the main directions of a non-specialist teacher preparation for biology instruction.

didactics of biology, biology instruction, teaching syllabi, preparation of instruction, teacher, Poland - 147307.

153. HOMOLA, J.:

Nová koncepce vyuky biologie na gymnáziu /New conception of biology teaching in secondary schools of general education/

Přír. vědy ve Šk., 36, 1984-1985, No. 1, pp.3-5.Lit. 10.

After 5 years of verifying of the new conception of biology instruction, biology instruction enters 1st forms of gymnasiusm, using temporary textbooks. The author suggests a theme plan for biology instruction in 1st forms of the school after the 1983 teaching syllabi.

didactics og biology, biology instruction, modernization, teaching syllabi, gymnasium, Czechoslovakia -147307.

154. HOMOLA, J.:

Seminář a cvičení z biologie. Volitelný předmět ve IV. ročníku gymnázia /Seminar and practical exercise in biology. An obtional subject in the 4th class of the gymnasium/

Přír. vědy ve Šk., 36, 1984-1985, No. 9, pp. 323-324.

The aim of the seminar is to revise knowledge gained before and orientate in possibilities of further studies. The seminar has 3 lessons a week, in a year there are 52 theoretical lessons, 26 lessons of exercise and 6 hours excursions. The structure of the seminar and exercise, and analysis of the theme are discussed.

didactics og biology, biology instruction, teaching syllabi, seminar, practical exercise, gymnasium, optional subject, 4th class, Czechoslovakia - 147307.

155. K diskusi o úpravách učebních osnov /To the discussion on the modification of teaching syllabi/

Přír. vědy ve Šk., 36, 1984-1985, No.8, pp.282-285.

During the school years 1980-1981 to 1983-1984 a four-year examining of the effectivity of the new conception of instruction, education and didactics on the 2nd grade of basic schools was finished Modifications are prepared by an expert committee of selected workers of ministry of education, research institutes on central and regional level, and of teachers. A complex analysis showed possibilities of new conception of basic school 2nd grade. Suggestions on changes are submitted.

didactics of biology, biology instruction, teaching syllabi, research, analysis, basic school, 2nd grade, Czechoslovakia - 147307.

156. KUKUŠKIN, G.J.:

Ochrana prirody v odinnadcatoj pjatiletke /Nature conservation in eleventh five-year plan/

Biol. v Šk., 59, 1985, No. 5, pp. 9-15.

The demands are directed towards improving of soils as the basic natural resource, towards planting of forests to protect soils, fighting against erosion, towards a biological way of plant conservation, a higher protection of national parks and nature reserves, towards air control, intensification of environmental control, and towards other important actions concerning nature conservation in the 11th five- year plan.

didactics of biology, biology instruction, nature conservation, teaching syllabi, environmental control, USSR - 147307.

157. Ot glavnogo upravlenija škol Ministerstva prosveščenija SSSR. Učebnaja programma po biologii /From main school management of the Ministry of Education of USSR. Teaching syllabi for biology/

Biol. v Šk., 59, 1985, No. 6, pp.36-61.

Initial notes to teaching syllabi of biology are discussed. There are recommendations to the didactic side of instruction and to syllabi for 6th-11th form of the secondary schools of general education. In the 6th form /68 periods/ botany is taught, in the 7th form /68 periods/ 36 periods for plants, 8 periods for bacteries, fungi and lichens, 24 periods for zoology. In the 8th form there are 68 periods of zoology, in the 9th form 68 periods of human biology, in the 10th form 34 periods of general biology, and in 11th form 51 periods of general biology. The syllabi introduce means of instruction, laboratory work, excursions and interdisciplinary relations. There are also recommendations to the control of knowledge and skills, to didactic literature and a list of basic means of instruction for individual forms.

didactics of biology, biology instruction, teaching syllabi, 6th-11th class, USSR - 147307.

158. Programmes des classes de biologie mathematiques supérieures et de biologie mathematiques speciales /Syllabi for instruction of biology-mathematics-higher grade, and biology-mathematics-special grade/ Biologie Geologie, 85, 1952, No.2, pp.305-338.

The syllabi include individual parts for mathematics, physics, biology, geology and geography. Parts of biology-zoology and physiology of animals has 32 periods in 1st year, 58 periods in 2nd year. 1st year has 27 periods of practical exercises /+ 9 seminars/, 2nd year has 18 periods of practical exercises /+ 6 seminars/. Cell biology has 82 periods and 15 periods of practical work.

didactics of biology, biology instruction, natural science. secondary school of general education - gymnasium, teaching syllabi, France - 147307.

7.6.1 Primary instruction curricula and teaching syllabi

159. TUPÝ, K.:

Prvouka ve 2. ročníku /Primary instruction in 2nd form/ Komenský, *109*, 1984-1985, No. 6, pp.335-337.

Methodical instructions are given for the school year 1985-86, teaching syllabi, a methodical pamphlet and partial modofications which do not change time devoted to the instruction, only some themes have been shifted. Motivation literature is recommended, changes in content and modifications of working sheets mentioned. Using of teaching aids is stressed.

didactics of biology, biology instruction, primary instruction, basic school, teaching syllabi, 1st grade, 2nd class, Czechoslovakia - 147307.

7.6.2 Natural science curricula and teaching syllabi

160. GRÖNKE, O.:

Vorschläge zur Unterrichtsgestaltung im Stoffgebiet "Einführung in die Lehre vom Leben" /Hints for conception of the theme "Introduction to the science of life"/

Biol. in der Sch., 34, 1985, No. 7/8, pp. 289-293.

During initial periods of biology it is necessary to introduce its object and its importance for society. The author suggests a conception of two instruction periods. The first one is to wake pupils´ interest in biology, the other to acquaint them with important biologic notions. Every lesson includes formulation of the educational and didactical aim, the organization of the lesson, the activities of the teacher and the pupils, formulation of tasks, definitions, homework, etc.

didactics of biology, biology instruction, natural science, basic school, 1st grade, teaching syllabus, thematic plan, GDR - 147307.

7.7 Investigation in contemporary biology instruction curricula and syllabi

161. FREJLAK, S. - STAWIŃSKI, W.:
Jak przezwycięzać aktualne trudności w realizacji programów nauczania biologii? Cześc 1. /How to overcome topical difficulties of fulfilling biology syllabi. Part 1/

Biol. w Szk., 38, 1985, No.1, pp.16-21.Lit.10.

The authors analyse difficulties appearing at realization of new biology syllabi. Their causes are external and internal. External causes are for example the change of syllabi, different demands, syllabi are inadequate to the needs of profession, conditions of connection with mental abilities of pupils. To internal causes belong also didactic imperfections, incorrect interpretation of syllabi, motivation of the work of biology teacher. Possibilities to overcome these difficulties are suggested.

didactics of biology, biology instruction, teaching syllabi, Poland -147307.

7.9 Endeavours for modernization in biology instruction

162. HORN,F. - KUMMER, G.:

Überlegungen zur Qualitätssteigerung des Biologieunterrichts in Klasse 5 /Contemplations over advancements in biology instruction in 5th form/

Biol. in der Sch., 34, 1985, No. 4, pp. 130-133.Lit. 2.

The long-time work with the present biology syllabi shows many advancements in content and process. Yet it is possible to arrive at further improvement by means of connecting instruction with practice, in using observations and experiments and in forming scientific world-view of pupils.

didactics of biology, biology instruction, modernization, teaching syllabi, basic school, 5th class, GDR - 147307.

163. IVANOV, J.J.:

Soveršenstvovat učebno-vospitatelnyj process /To improve the didactic and educational process/

Biol. v Šk., 59, 1985, No. 4, pp. 3-5.

There is the second year of school reform, the last year of the five-year plan, time before 27th congress of the Communist Party of the Soviet Union. The April plenary session of the Central Committee of the party discussed the problem of improving the effectivity of school education. Main attention is to be paid to the instruction period. Textbooks and other means of instruction must be used more efficiently. There are assignments for teachers, pupils, parents, children organization PO. New tasks are prepared for the coming period.

didactics og biology, biology instruction, modernization, USSR - 147307.

8.2 The didactical principle of combining school work with every-day life. Regional and current principles

164. CHAKIMOV, CH. CH. - MAZITOV, R.N.:
Odin iz putej sbliženija obučenija studentov pedinstitutov s praktikoj raboty školy /One of the ways how to connect students of pedagogical institutes with school/
Biol. v Šk., 59, 1985, No. 4, pp. 70-71.

Brežněv State Pedagogical Institute helps the nearby schools in educational work. Students take active part in organization of nature conservation.

didactics of biology, biology instruction, didactical principle, connection + school + life, pedagogics +

institute, USSR - 147309.

165. MEZENOVA, A.I.:

Krepit svjat obučenija s žiznju /Realization of connecting studies and life/

Biol. v Šk., 59, 1985, No.6, pp.3-6.

The author analyses the didactical principle of connecting school with life. It is necessary to fulfil the reform of the school of general education: it should give pupils deep knowledge, practical skills, it should help them choose their profession. According to the Decree of April plenary session of the Central Committee of the Communist Party of the Soviet Union, it is necessary to improve work education in schools.

didactics of biology, biology instruction, didactical principle, connection + school + life, modernization, secondary school of general education, USSR - 147309.

8.7 The didactical principle of respecting the individuality of the pupil

166. CLAUSEN, R. - KLAHM, G.:

Outsideren in der Klasse /Outsiders in the classroom/

Unterr. Biol., 9, 1985, No. 110, pp. 18-19. Lit. 6, 1 worksheet.

The authors direct their attention to outsiders in 5th and 6th class. They suggest a play with a role to find out how to treat outsiders. Usually there is a trend to push outsiders out of the group. In the play the pupils have to bring reasons, why they refuse outsiders. They have to find out that their behaviour to outsiders is not correct and have to suggest better behaviour, a possibility of accepting outsiders, a way leading to outsiders' integration with the group. The theme is planned for 2 - 3 periods.

didactics of biology, biology instruction, respecting individuality, didactic principle, FRG - 147309.

167. HASS, G.:

Physiologie des Stoffwechsels /Klasse 12/ - Einbeziehung von Grundwissen aus der Physik /Physiology of metabolism in 12th class - making use of the basic matter of physics instruction/

Biol. in der Sch., 34, 1985, No. 6, pp. 230-232. Lit.5, 1 fig.

It is possible to use knowledge of physics, namely thermodynamics, to increase the understanding of biologic processes in physiology. The author has found possibilities to apply some thermodynamic notions in biology instruction.

didactics of biology, biology instruction, didactic principle, respecting individuality, interdisciplinary relation, physiology, human biology, secondary school, 12th class - GDR - 147307.

168. HEINZEL, I.:

Arbeit mit differenzierten Aufgaben im Verlaufe eines Schuljahres /Work with differentiated tasks during school year/

Biol. in der Sch., 34, 1985, No. 2/3, pp. 78-85. 2 fig.

In the process of acquiring knowledge it is helpful to use differentiated tasks, that is tasks with rising demands. During school year, the pupils' part in work should rise, the teacher's part fall. The author uses the example of the definition of vertebrates. She analyses biology textbook for 5th class and suggests some differentiated tasks.

didactics of biology, biology instruction, didactic principle, respecting individuality, differentiation + task, 5th class, GDR - 147309.

169. KLEMM, H.:

Jeden Schüler kennenlernen - aber wie? /To know every pupil - but how?/

Biol. in der Sch., 34, 1985, No. 4, pp. 133-137. Lit. 5.

For the practice of instruction it is very important to know individual peculiarities of all pupils. Individual peculiarities are expressed for example in the sensitiveness of sensuous organs, in temperament, thinking, interests, attitudes, etc. To know them means to increase planning of instruction. The author informs about the foundations of pedagogic - psychological diagnostics and recommends some suitable methods: observing pupils´ activity, dialogue, questionaire, analysis of pupils´ efficiency, experiment. Biology instruction has a specific share in the development of pupil´s personality.

didactics of biology, biology instruction, didactic principle, respecting individuality, GDR - 147309.

170. NIES, M.:
Zur altersgerechten Vermittlung wesentlicher Zusammenhänge und Begriffe /Age adequate imparting of fundamental circumstances and notions/
Biol. in der Sch., 34, 1985, No.1, pp.30-31. Lit.4.

One of the conditions of successful biology instruction is the respecting of pupils´ age. The author informs about her own way of fulfilling this demand in the 5th form /theme: mammals/ and in 8th and 9th forms /themes: digestion and metabolism/. She bases her instruction on suitably chosen questions and a notion system.

didactics of biology, biology instruction, respecting individuality, age peculiarities, 5th form, 8th - 9th class, GDR - 14[illegible].

5.8 The didactical principle of respecting interdisciplinary relations

171. LACOMBE, G.:

Histoire des sciences et interdisciplinarité - Biologie - Francais /History of science and interdisciplinary relations biology - French/

Biol. - Geol., 85, 1985, No. 2, pp. 290-293.

It is possible to make a use of relations between biology and French. From French fiction extracts are selected describing plague, cholera, tuberculosis. Literary extracts are accompanied by projection of slides. Process follows the formula: origin of plague, prevention, looking after the patients, fear, anguish, economic and demographic consequences of the disease, novels. Similarly information on tuberculosis and cancer is worked out.

didactics of biology, biology instruction, French language, interdisciplinary relations, literary text, historical science, France - 147307.

172. MAY, D.S.:

An Interdisciplinary Look at Lactose Malabsorption

The Amer. Biol. Teacher, 47, 1985, No. 5, pp.154-158.

Lit. 10, 1 photo, 1 fig., 2 tab.

We can find relations even between seemingly not connected subjects like genetics, physiology and ecology. The author discusses interdisciplinary relations in physiology of animals and men, in lactose malabsorption, a biochemical matter. Malabsorption of lactose is explained and described.

didactics of biology, biology instruction, human biology, physiology + man, enzyme, USA - 147307.

173. PERKINS, M.W.:

The Foxfire Approach to Teaching Science: An Interdisciplinary Design

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 281-285. 1 photo, 1 questionaire, 3 worksheets.

Students' interest in biological problems, often with interdisciplinary content, is described. 2 550 pupils of 9th and 10th form of the secondary school in Northeastern, Georgia, were choosing themes for projects. They were interested in folkmedicine, new medicine, field work, herbs, folk recipes for using herbs, their picking. The author points to relations between botany and biochemistry.

didactics of biology, biology instruction, interdisciplinary relation, botany, biochemistry, medicine, research, USA - 147307.

174. SKLANSKY,D. - ROUSSIENOE, N.:

Quelque modéles probabilistes pour l'etude de l'hérédité. Une réflexin interdisciplinaire à propos des terminales scientifiques /Some models of probability for genetic practice periods. Interdisciplinary relations in higher level of science instruction/

Biol. - Geol., 85, 1985, No. 1, pp. 95-103. Lit. 5.

In the highest forms of secondary school /gymnasium/ in genetics instruction, there are possibilities of making use of interdisciplinary relations between biology and mathematics. The authors introduce mathematical exercises.

didactics of biology, biology instruction, interdisciplinary relations, mathematics, genetics, France - 147313.

8.9 The didactical principle of hygienic and safe biology instruction

175. BELT, W. - DUNKLEBERGER, G.:

Safety Considerations for the Biology Teacher

The Amer. Biol. Teacher, 47, 1985, No. 6, pp. 340-345.
Lit. 14, 2 photos.

A special attention is paid to hygiene and safety in biology laboratory. The teacher is responsible for the laboratory, he never leaves it before pupils do. He must know the dangers of laboratory work, and inform his pupils about them. He must demand from the pupils strict safety, protection of eyes, a correct measuring of chemicals, esp. acids, poisons, alkali. He must know poisonous plants and animals.

didactics of biology, biology instruction, didactical principle, safety of work, chemicals, plant, animal, poison, biology teacher, laboratory work, USA - 147313.

9.5 Interview method

176. HUNNESHAGEN, H.:

Hospitiert und kommentiert. Stundenziel erreicht? /Visiting classes and commenting on them . Has the aim of the instruction been reached?/

Biol. in der Sch., 34, 1985, No. 7/8, p. 272.

During the instruction in 12th form the teacher was explaining heterotrophic assimilation, the role of consumers and reducers in ecosystem, and the pupils put questions. The problem touched the role of man in ecosystem. The teacher promptly reacted and introduced a valuable talk on the problem.

didactics of biology, biology instruction , instruction methods, dialogue, 12th class, secondary school, GDR - 147309.

9.7 Method of observation

177. CIBULKA, J.:

Zázraky rašení /Marvels of budding/

ABC mladych tech. a přírodovědců, 29, 1984-1985, No. 12, p. 15, 2 photos, 1 fig.

Buds and composition of leaves in the bud and its kinds are discussed. Recommended for laboratory work.

didactics of biology, biology instruction, botany, laboratory work, method of instruction, observing, Czechoslovakia - 147357.

178. ČTYŘOKÝ, P.:

Keptuška běloocasá - endemický druh západní Asie /Vanellus leucurus - an endemic species of western Asia/

Živa, 33, 1985, No. 2, pp. 73-74. 2 photos.

Vanellus leucurus belongs to Charadriiformes, and rarely flies to Europe. It hibernates in north Africa and southewestern Asia. The author describes his observings of this bird during his stay in Iraq.

didactics of biology, biology instruction, method of instruction, observing, birds, Czechoslovakia - 147357.

179. FREEMANN, H.E.:

Chemical components of cells at the microscopic level

J. of Biol. Educ., 19, No. 2, p. 106.

The author demonstrates presence of protein, sacchar and nucleal acid in a thin section of a potato. He recommends demonstration of the presence of fat in avocado cells. These demonstrations are suitable for laboratory training of pupils, as a proof of individual fundamental organic substances in the cell.

didactics of biology, biology instruction, method of instruction, observing, microscope + specimen, cell, proteins, sacchar, fat, Great Britain - 147357.

180. FREEMANN, H.E.:

Plant histology: clearing and the optical section

J. of Biol. Educ., 19, 1986, No. 1, pp. 13-15. Lit.1, 7 photos.

A leaf of touch-me-not /Impatiens sp./ - clearing gets gradually sharper in single levels of the leaf in 6 optical sections. Observing suitable for laboratory work. Photographs show microscopis building of single sections. History and present state of clearing of botanic objects are described.

didactics of biology, biology instruction, method of instruction, observing, microscope + specimen, histology, histology + plant, Great Britain - 147357.

181. GUILFOILE,P.:

Magnetotactic Bacteria in the Classroom

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 301-302. Lit. 4, 4 fig.

Magnetotactic bacteria are a widely spread group of microorganisms, able to orientate to earthly magnetism. They live on the bottom of sediments of almost all marshes, waters, rivers, lakes and estuaries. They were for the first time described by Blakemore in 1975 and recently they have been studied very much. They are a suitable object of biology instruction in secondary schools and universities. The author describes his work with them.

didactics of biology, biology instruction, observing, bacteria, magnetism, USA - 147357.

182. HABROVÁ, V. - NEDVÍDEK, J.:

Pozorování svalových buněk v zárodku /Observing of muscle cells in embryo/

Přír. vědy ve Šk., 36, 1984-1985, No. 3, pp. 88-90. Lit. 3, fig. 3.

The authors speak about the possibility of work with eggs and embryos of some of our amphibians, an easily received material for studeis of various biologic processes. Studied are mesodermal structures, muscular development and typical myoblasts and multinuclear myotubes.

didactics of biology, biology instruction, method of instruction, observing, practical training, laboratory work, amphibians, embryology, Czechoslovakia - 147357.

183. HEROLD, D.:

Beobachtungen, Experimente und ihre Wirkung auf die Schüler /Observing, experiments and their influence on pupils/

Biol. in der Sch., 34, 1985, No. 11, pp. 401-403. Lit.6.

The ways of forming pupils' indepenednce in biology instruction are discussed. Motivated problem tasks are suitable means. Theoretic preconditions are demonstrated in the theme "Cell cytoplasm and its flow".

didactics of biology, biology instruction, method of instruction, observing, experiments, problem instruction, 7th form, basic school, GDR - 147357.

184. HORNÍK, F.:

Šváb americký jako modelový organismus /American cockroach as model organism/

Přír. vědy ve Šk., 36, 1984-1985, No.3, pp.83-88. Lit.13, 6 fig.

American cockroach is suitable for practical observing and experiments in biology instruction in 1st form of secondary school /gymnasium/. Directions for dissection and selected observings and experiments are described.

didactics of biology, biology instruction, method of instruction, observing, experiment, practical exercise, secondary school of general education /gymnasium/, 1st form, insect, Czechoslovakia - 147357.

185. HUDEC, K.:

Nové spůsoby sledování tahu /New ways of observing bird migration/

Živa, 33, 1985, No. 2, pp. 72-73. 1 photo.

For the control of marked birds a new optical technique is used: stationary binoculars enlarging 20-40 times. Various kinds of bird marking are described.

didactics of biology, biology instruction, observation, ornitology, Czechoslovakia - 147357.

186. CHOMČENKO, S.I.:

Kak organizovat fenologičeskije nabljudenija /How to organize phenologic observations/

Biol. v Šk., 59, 1985, No. 4, pp. 57-64. 9 tab.

Phenology studies laws of seasonal periodical phenomena in the world of plants and animals and their mutual relations to environment, climate, soil, etc. The author informs about his long-time experience with phenologic observations, methods of observing and finding out of individual phenologic elements. Leningrad and Irkutsk are centres for gathering of information.

didactics of biology, biology instruction, observation, phenology, USSR - 147357.

187. JESCHKE, E.M.:

Mikrobiologische Demonstrationen auf einem mit Kartoffelstärke verfästigten Nährsubstrat /Microbiologic demonstrations in the nutriment substrate strengthened with potato starch/

Biol. in der Sch., 34, 1985, No. 12, pp. 476-477. Lit.6.

Agar is the foundation for preparing nutriment substrate in microbiology, Agar is produced in Japan. It is very expensive and therefore there has been looked for a substitute in GDR. It has been found in potato starch. Starch serves as medium for the strengthening of nutriment substrates. The substrate has slightly different qualities, but it is sufficient for instruction purposes. The article describes the preparation of the substrate.

didactics of biology, biology instruction, observation, microbiology, cultivation + microorganism, GDR - 147357.

188. JURČÁK, J.:

Zjednodušení pozorování chromozómů při mitóze /Simplification of observation of chromosomes in mitosis/
Přír. vědy ve Šk., 36, 1984-1985, No. 6, p . 213. Lit.3, 2 fig.

Instead of traditional observation of chromosomes in mitosis, the author recommends observing of the leaf basis of budding onion. He describes the way of preparation of the specimen and its observing.

didactics of biology, biology instruction, microscope + specimen, observation, division + cell, secondary school of general education /gymnasium/, Czechoslovakia - 147356.

189. MANUEL, D.E.:

My Body Project - Getting out, up about the lungs
J. of Biol. Educ., 19, 1985, No. 1, pp. 3-4. Lit. 3.

The author describes laboratory work with a mammal´s lungs. It is possible to get lungs from abbatoirs. The author pays attention to hygiene problems of the work, and introduces directions for laboratory work.

didactics of biology, biology instruction, human biology, laboratory work, breathing, observation, Great Britain - 147357.

190. OXLADE, E.:

A simple plant growth analysis

J. of Biol. Educ., 19, 1985, No. 2, pp. 131-136. Lit.12, 7 fig.

The author describes analysis of the stem of dandelion performed by means of a simple method demanding no special devices. It leads to a general knowledge about the growth of plants, and is suitable for pupils of 2nd and higher forms of secondary schools.

didactics of biology, biology instruction, method of instruction, observation, growth + plant, physiology + plant, Great Britain - 147357.

191. PASKE, E.R.T.:

Learning How to Observe the Behaviour of Animals. A Laboratory Exercise

The Amer. Biol. Teacher, 47, 1985, No. 5, p. 294.

The author describes observation of animals in local zoological garden in 2 periods of instruction. Ethologic observation demands more time. After 2 hours of observation it is possible to distinguish the elements of behaviour. Also the objects of observation are mentioned: pigeons, ducks, grasshoppers, crickets, bees, wasps, ants, etc. The method of observation and taking notes are also described.

didactics of biology, biology instruction, ethology, method of instruction, observation, USA - 147357.

192. SETTEL, J.:

Study of Animal Behavior in a Zoo

The Amer. Biol. Teacher, 47, 1985, No. 5, pp.270-274. 6 fig.

Every zoological garden can become a laboratory for pupils. They can study hiding places, food, dens, bahaviour of mothers, wooing, communication, etc. Other possible observations are mentioned.

didactics of biology, biology instruction, method of instruction, observation, ethology, zoological garden, USA - 147357.

193. SMRČEK, M.:

Hnízdění kachen v jižních Čechách /Nesting of ducks in southern Bohemia/

Živa, 33, 1985, No. 2, pp. 74-76. 3 photos.

The author describes nesting of ducks in southern Bohemia on the basis of a regular winter summing up, research of time and progress of nesting. Since 1975 in Blatensko region and since 1978 in Třeboň region, 2 200 nests have been found and studied. There are 9 kinds of ducks. Also negative factors of duck nesting are mentioned.

didactics of biology, biology instruction, observation, work on the grounds, birds, nest, ornitology, Czechoslovakia - 147357.

194. ŠEVČÍK, J.:

Hnízdění orla mořského na Třeboňsku /Nesting of sea eagle in Třeboň region/

Živa, 33, 1985, No. 2, p. 76, 1 photo.

Nesting of sea eagle /Haliaeetus albicilla/ is described. Southern Bohemia, the T5eboň basin, is one of hibernation localities of sea eagle in Middle Europe. 10 - 15 eagles can be regularly found nere. The first appear in October to November, in March they fly away. At present they can be seen in this region even in summer. Described nesting is from 1984.

didactics of biology, biology instruction, work on the grounds, birds, birds of prey, Czechoslovakia -147357.

195. TICHÝ, V.:

Ptactvo v Průhonickém parku / Birds in Průhonice Park/

Živa 33, 1985, No. 4, pp. 154-156. 4 photos.

Průhonice Park is a varied complex of avifauna. The article is a survey of the occurrence of individual species. Nesting species are described.

didactics of biology, biology instruction, observation, birds, work on the grounds, Czechoslovakia - 147357.

196. VÄTH, R.:

Mikroskopische Beobachtungen von Nervenzellen. Herstellung gefärbter Dauerpräparate. - Ein Schulexperiment /Microscopic observations of nerve cells. Preparing of

coloured permanent specimens. A pupil experiment/
Prax. der Naturwiss. - Biol., 34, 1985, No. 4, pp.42-44.
2 microphotos, 10 fig.

An easy method of preparing a permanen specimen of nerve cells from pig's spinal cord is described. Work progress of preparing coloured specimens is described in detail. Suitable for practical exercise.

didactics of biology, biology instruction, method of instruction, observation, practical exercise, nervous system, cell, FRG - 147357.

197. WEBER, K.:
Zum Mikroskopieren in Klasse 6 /The use of microscope in 6th form/
Biol. in der Sch., 34, 1985, No. 5, pp. 202-203.Lit.2.

The author speaks about her experience in teaching pupils work with microscope. Her conclusions are analyzed in the theme "Acclimatization of insects to environment", in which pupils solve 2 tasks: 1. observation of insect legs, 2. observation of ant's, mosquito's, bee's and other insect's mouth organs.

didactics of biology, biology instruction, method of instruction, observation, microscope, 6th class, basic school, GDR - 147357.

198. ZABEL, E. - ALDEFELD, D.:
Verhalten bei Tieren - einige Beobachtungen und Experimente /Animal Behaviour - observations and experiments/

Biol. in der Sch., 34, 1985, No. 11. pp. 409-416. Lit.16, 7 tab.

Introduction of optional ethology instruction in secondary schools of general education /gymnasium/ is connected with the necessity of working out suitable themes of observation and experiments. The themes are introduced here. The authors report on results of the research depending on such instruction. They speak about 3 problem zones: 1. behaviour and environment, 2. flow of information, 3. various functional zones of animal behaviour. Every experiment includes the stating of problem, formulation of hypothesis, fulfilling of the experiment and evaluation of results. The article brings tables and surveys enabling evaluation of observed elements of behaviour.

didactics of biology, biology instruction, method of instruction, observation, experiment, ethology, secondary school of general education /gymnasium/, GDR - 147357.

9.8 Method of experiment

199. BARTHOLD, M.:

Kosmetik und Tierversuche /Cosmetics and experiments with animals/

Unterr. Biol., 10, 1985, No. 111, pp. 52-53.Lit.8.

Experiments with animals take place also in connection with production of cosmetics. The article includes directions for 1st grade of secondary schools, and stresses elements of health care education. To the instruction model belongs practical work of pupils - production of day creme for pupils.

didactics of biology, biology instruction, method of instruction, experiment, experiment + animal, health care education, cosmetics, secondary school, FRG - 147309.

200. BERY, J.:

Cells and hypotonic solutions

J. of Biol. Educ., 19, 1985, No. 1, p. 15. 1 fig.

Means of instruction concerning functions which take place in vegetable and animal cells in hypotonic solutions are introduced. For demonstration a model is used composed of a box and a little inflation balloon. Animal cell in hypotonic solution blows up and bursts, vegetable cell blows up, leans on the walls of the balloon and is in turgor. Model balloon represents cytoplasm.

didactics of biology, biology instruction, method of instruction, experiment, model, cell, Great Britain - 147 -309.

201. BOLKART, K.H. - HOPF, H.:

Drei einfache Versuche zur Substanzaufnahme in Zellen

/Three eays experiments with receiving of substances in cells/

Prax. der Naturwiss. - Biol., 14, 1985, No. 4, pp.45-48. Lit. 2, 2 fig., 2 tab.

To theory of receiving substances in cells three experiments are added, which show the influence of cations on permeability of cell membranes, the selective receiving of ions by germinating seed of wheat and demonstration of selective permeability of the cell of yeast-fungus. The described experiments are suitable for pupil practical exercises.

didactics of biology, biology instruction, method of instruction, experiment, practical exercise, cell, cell membrane, FRG - 147309.

202. EMMERICH, W.:

Reaktionszeitmessung im Biologieunterricht /Measuring of time of reaction in biology instruction/
Der math. und naturwiss. Unterr., 38, 1985, No. 4, pp. 226-237. 2 fig.

A possibility of measuring of reaction time is introduced. It is done by means of digital technique on a cheap instrument with the exactness of a hundredth of a second. Use of the instrument, directions for its making and formulas for its calculation. Calibartion, way of its building and experiments are described.

didactics of biology, biology instruction, method of instruction, measuring instrument, human biology, FRG-147309.

203. FALK, B.:

Brutpflege bei Mäusen /Mice care for their young/

Unterr. Biol., 9, 1985, No. 102, pp.15-17. Lit. 13, 1 worksheet.

Mice, able to reproduce throughout the whole year, are suitable for ethologic observations. Installation for mice breeding, some experiments and observations are described. The theme of instruction is divided into periods: We learn to know our mice, Mice build their nests, Mice look after their young.

didactics of biology, biology instruction, ethology, mammals, rodents, experiment, observation, reproduction + animal, FRG - 147309.

204. FÜHRES, W.:

Die Primarreaktion der Photosynthese - eine Unterrichtseinheit für die Sekundarstufe II /Primary reaction of photosynthesis - a theme for secondary grade II/ Prax. der Naturwiss.- Biol., 34, 1985, No. 2, pp. 4 - 12. Lit. 7, 16 fig, 4 worksheets.

Primary reaction of photosynthesis represents a chain of redox reactions beginning with water fission and terminating with $NADP^+$ reduction. Precondition: to understand redox reactions. The basis of these reactions is worked out on an easy pre-experiment in electrochemistry. Methodic hints for teachers are added.

didactics of biology, biology instruction, method of instruction, experiment, physiology + plants, photosynthesis, FRG - 147309.

205. GILL, J. - HOWELL, P.:

Food choice in the common snail /Helix aspersa/

J. of Biol. Educ., 19, 1985, No. 1, Lit.1, 2 fig., 1 tab.

In the Mediterranean region and in western Europe there lives common snail /Helix aspersa BORN/. It is easy to get it and keep in school. It is possible to do many observations and experiments. The authors describe experiments with food choice, assigned for pupils of 14 - 15 years of age.

didactics of biology, biology instruction, method of instruction, experiment, onservation, invertebrates, molluscs, Great Britain - 147309.

206. GILL, J. - SAUNDERS, T.:

A study of germination inhibitor levels in tomatoes during a period of post harvest storage

J. of Biol. Educ., 19, 1985, No.2,pp.112 - 113. Lit.1, 2 fig.

Germination inhibitors in tomatoes are reduced during storage time. Their fall can be experimentally found out. It is an interesting control of germination mechanism. Experiments are suitable for 16 year old pupils. Germination inhibitors are extracted and then used for experiments with watercress germination.

didactics of biology, biology instruction, method of instruction, experiment, physiology + plant, inhibitor, seed, Great Britain - 147309.

207. GLAWE, B.:

Ein Modellversuch zum Verhalten homologer Chromosomen bei Meiose und Befruchtung /Model experiment on homologous chromosomes during meiosis and fertilization/

Biol. in der Sch., 34, 1985, No. 7/8, pp. 277-278. Lit.3.

To respect the inner logics of genetics it is good to go through chromosome theory before Mendel laws. For this reason the author uses red and white plastic cubes placed in two small bags. Through the alternating taking out with closed eyes it is possible to demonstrate the nature of genetic functions during meiosis and fertilization.

didactics of biology, biology instruction, method of instruction, experiment, genetics, GDR - 147309.

208. GOTZLER, H.:

Die Dunkelreaktionen der Photosynthese /Dark reactions of photosynthesis/

Prax. der Naturwiss. - Biol., 34, 1985, No. 2, pp. 28-31. Lit. 7, 3 models for foils.

The supplied foils enable mastering of the theme of instruction - the dark phase of photosynthesis. The place of CO_2 fixation is chloroplast matrix. Assimilation of CO_2 is the reduction process. Foils enable experimental explaining of Calvin cycle and of the process of dark phase.

didactics of biology, biology instruction, method of instruction, experiment, means of instruction, transparent, physiology + plant, photosynthesis, FRG - 147309.

209. GOTZLER, H.:

Die Enzymwirkung beim Lysozym /Enzymatic effect of lysozym/

Prax. der Naturwiss. - Biol., 34, 1985, No. 5, pp.10-14. Lit. 3, 6 fig., 2 models for copying.

Lysozym is in its structure and effect one of the very well known enzymes. It can be therefore used in instruction for explaining various problems connected with enzymes. Structure and biological function of lysozym is briefly described, as well as mechanism of the influence during murein fission, murein being the building material of the bacteria cell.

didactics of biology, biology instruction, physiology, bacteria, enzyme, method of instruction, experiment, FRG - 147309.

210. GÖNNER, M.:

Modellversuche zur Immunbiologie und Evolution /Model experiments to immunologic biology and evolution/

Unterr. Biol., 9, No. 107, pp.46-47. Lit.4, 1 fig.

Relation between individuals and species can be found by comparing necleotid sequences DNA and proteins. The author prepares model experiments for this theme in school instruction.

didactics of biology, biology instruction, method of instruction, experiment, evolution, immunity, FRG - 147309.

211. GREBEL, D.:
Die Sāneempfindlichkeit der Chlorophylle - eine weniger bekannte Eigenschaft der Photosynthesepigmente /Ability of chlorophyll seeing - a less known quality of photosynthesis pigments.
Prax. der Naturwiss.-Biol., 34, 1985, No. 2, pp.37-40.
Lit. 5, 4 fig.

Diluted acids substitute complex of bound ion of chlorophyll magnesium by two ions of hydrogen and thus originate olive-brown pheophytin . By school means two following experiments are possible: making of solution of raw chlorophyll from green leaves, isolation of chlorophyll, binding of pheophytin through the effect of acid on chlorophyll, and others.

didactics of biology, biology instruction, physiology + plant, method of instruction, experiment, photosynthesis, plastid, FRG - 147309.

212. HARBACH-SCHLESIER, H. - HAAS, L.:
Die Zellen des Immunosystems /Immunity system cells/
Unterr. Biol., 9, 1985, No. 107, p. 48. Lit. 10.

The authors describe the example of a method which separates monocytes and lymphocytes from blood cells so that they accumulate and their microscopic examination is possible.

didactics of biology, biology instruction, immunity, method of instruction, experiment, FRG - 147309.

213. HOFMANN, H.:

Anatomische und strukturelle Grundlagen der Photosynthese /Anatomical and structural foundations of photosynthesis/ Prax. der Naturwiss., 34, 1985, No. 2, pp. 13-19. Lit. 9, 6 fig., 1 worksheet, 3 models for foils.

The article deals with anatomy and structure of chloroplasts of higher plants, and structure of tylacoid membrane, including instruction sequences and adequate means of instruction.

didactics of biology, biology instruction, physiology + plant, photosynthesis, method of instruction, experiment, observation, means of instruction, microscope, FRG - 147309.

214. HOFMANN, K.:

Die Bewegungen der Spaltöffnungen /Vent motions/ Prax. der Naturwiss. - Biol., 34, 1985, No. 2, pp.20-27. Lit. 6, 8 fig., 3 models for foils, 1 tab.

Morphologic bases for understanding the building and function of vents are explained. Experiments with microscopic observation of the motions are described, and their measuring. Experiments and models for foils enable understanding of a difficult part of botany.

didactics of biology, biology instruction, physiology +

plant, covering network, method of instruction, experiment, FRG - 147309.

215. KLEINSCHMIDT, V. - THIELE, W.:

Unser Umgang mit Tieren. Unterrichtsmodell für die Orientierungsstufe - 5.-6.Schuljahr /How we treat animals. Instruction model for orientation grade - 5th to 6th form/ Unterr. Biol., 10, 1985, No.111, pp. 18-21. 3 fig. 1 worksheet.

It is an information on history of domestic animals, their keeping, esp. today. Attention is paid to pets, of whom there are about 55 million in FRG.

didactics of biology, biology instruction, domestic animals, experiment, breeder, FRG - 147309.

216. KÖHLER, H.:

Dynamisches Modell der Enzymregulation durch isosterische und allosterische Effektoren /Dynamic model of enzymatic regulation through isosteric and allosteric effectors/ Prax. der Naturwiss. -Biol., 34, 1985, No. 5, pp. 24-34. Lit. 6, 5 foils, 10 fig.

The author introduces a model to represent enzymekinetics/Michaelis - Menton kinetics/. Enzymekinetics deals with influencing of enzymatic reactions, with isosteric or competitive muffling, allosteric effect, mixed muffling, inversible muffling of enzymatic reactions. Enzymkinetics here is worked out for instruction.

didactics of biology, biology instruction, biochemistry, enzyme, experiment, model, kinetics, FRG - 147309.

217. KUBIŠTOVÁ, I. - KUMMEROVÁ,M.:
Stanovení obsahu fosforu v rostlinách /Stating of phosphorus in plants/
Přír. vědy ve Šk., 36, 1984-1985, No. 4, pp. 131-132.
Lit. 3.

To the theme Life functions of plants, divided into three periods, the authors describe necessary chemicals and solutions for experiments.

didactics of biology, biology instruction, physiology + plant, method of instruction, experiment, analysis, amount of substance, phosphorus, Czechoslovakia - 147309.

218. LARJUŠKIN, V.I.:
Opyty po selekcii kartofelja /Experience of potato selection/
Biol. v Šk., 58, 1985, No. 4 , pp.55-56.

The article describes potato selection done by pupils of an eight-year school. The aim of selection is resistance against Colorado beetle. Protection of potatoes against Colorado beetle is not yet sufficiently solved. Therefore potatoes are crossbred with wild species and those resistant against the beetle are selected. Greatest resistance show Solanum polyadenium and Solanum bulbocastanum.

didactics of biology, biology instruction, genetics, root-crop, generally profitable work, basic school, experiment, USSR - 147309.

219. LEHMANN, R.:
Experimente in Klasse 12 - Erfahrungen und Vorschläge
/Experiments in 12th form - experience and suggestions/
Biol. in der Scn., 34, 1985, No. 11, pp. 404-405. Lit. 2.

For 12th form the teaching syllabi prescribe 15 experiments, of which 11 to theme "Physiology of metabolism". The author recommends several arrangements, for example an equipment for experiments, optimal demostration and interpretation of results.

didactics of biology, biology instruction, general biology, biochemistry, secondary school, 12th class, method of instruction, experiment, GDR - 147309.

220. LICHOLAT, T.V.:
Perspektivy primenenija reguljatorov rosta rastenij v opytničeskoj rabote učaščichsja /Perspectives of using of growth regulatores in experimental work of pupils/
Biol. v Šk., 59, 1985, No. 2, pp. 66-70. Lit. 4, 1 tab.

The author adds to the survey of growth regulators further substances regulationg development of generative organs, ripening and falling of fruits. The article brings directions for pupil experiments and their variations. The editors of the periodical inform on possibility of orders of recommended stimulators and addresses of suppliers.

didactics of biology, biology instruction, physiology + plant, growth substance, experiment, USSR - 147309.

221. **MATZKE, M.:**

Zur Behandlung der Evolutionsrichtungen in der Stoffeinheit "Theorie der Stammesentwicklung"/Treating of evolution in the theme "Theory of phylogenesis"/
Biol. in der Sch., 34,1985, No.11, pp. 406-409. Lit. 2.

The contribution suggests a suitable way of the instruction of the given theme, using centrally distributed aids of instruction /foils, slides, textbooks, etc./ and genuine objects. From this aspect the author analyses conception of two instruction units: Directions of evolution - progressive development, Directions of evolution - specialization, regressive development-

didactics of biology, biology instruction, general biology, evolution, secondary school, method of instruction, experiment, means of instruction, GDR - 147309.

222. **MERKLE, M.:**

Das Tier als Modell /Animal as model/
Unterr. Biol., 10, 1985, No. 111, pp. 42-47. Lit. 37, 3 fig., 5 worksheets.

The article deals with the problems of experiments with animals, in what philosophical, ethic, scientific, economic, social and political situation the experiments take place, what is their aim when man puts the questions. Discussed is the physiology of the experiment and emotions which occur during the experiment, the anxiety of the animal, and physiology of emotions. The question is solved, whether fear is teachable.

didactics of biology, biology instruction, method of instruction, experiment, physiology + animal, secondary school, 13th class, FRG - 147309.

223. **MIRAM, W.:**

Anmerkungen zur Behandlung der Photosynthese im Unterricht der Secunderstufe II. / Notes on photosynthesis in instruction on secondary grade II/
Prax. der Naturwiss. - Biol., 34, 1985, No. 2, pp. 1-3.
3 fig.

The author makes a use of redox-chemistry. He describes experiments during the explanation of reactions, photosynthesis, reduction means and suitable experiments for explaining complicated problems of photosynthesis and the course of the glucose synthesis.

didactics of biology, biology instruction, physiology + plant, photosynthesis, method of instruction, experiment, secondary school, FRG - 147309.

224. PFISTER, M.:

Tierversuche - Prüfstein unserer Tierschutzethik /Experiments with animals - probation of our animal ethics/
Unterr. Biol., 10, 1985, No. 111, pp. 35-41. Lit. 19,
1 information leaf, 2 worksheets.

The article is meant for secondary grade II, for 11th and 12th form. Has man the right to experiment with animals? Where is the ethical limit of the experiments? Only in FRG 10 million of experimental animals are used. The author introduces experience with animal experiments. The problem is widely solved in 3 instruction periods.

didactics of biology, biology instruction, method of instruction, experiment, research, secondary school, 11th and 12th class, FRG - 147309.

225. PILHOFER, W.:

Die Phenoloxidasen, eine in der Natur weitverbreitete Enzymgruppe /Phenoloxidizers, a group of enzymes widely spread in nature/

Prax. der Naturwiss. - Biol., 34, 1985, No. 5, pp. 20-23. Lit 10, 6 fig., 1 worksheet.

Phenoloxidisers are widely spread in nature. They are responsible for some functions in nature like browning of cut potatoes and apples. Several experiments for school exercises with these enzymes are spoken of.

didactics of biology, biology instruction, physiology, enzyme, method of instruction, experiment, FRG - 147307.

126. PÜTTER, M.:

Schülerpraktikum zur Photosynthese /Pupil exercise to photosynthesis/

Prax. der Naturwiss. -Biol., 34, 1985, No. 2, pp. 41-47.

Directions for experiments proving loosening of oxygen during photosynthesis, dependency of photosynthesis on light, on carbon dioxide and on chlorophyll.

didactics of biology, biology instruction, physiology + plant, photosynthesis, method of instruction, experiment, practical exercise, FRG - 147309.

227. SCHAAF, R.:

Tierversuche: Versuche an Tieren /Experiments with animals: experiments on animals/

Unterr. Biol., 10, 1985, No. 11, pp. 4-12. Lit. 47, 5 fig.

For school purposes the author prefers model experiments to experiments on live animals. He suggests to reduce experiments with live animals and discusses problems connected with the use of live animals in school experiments.

didactics of biology, biology instruction, method of instruction, experiment, physiology + animal, nature conservation, law, FRG - 147309.

228. SCHAAF, R. - SCHNEIDER, M. - WAGNER, M.:

Leid und Schmerz im Tausch gegen Medikamente?/Suffering and pain or medicaments?/

Unterr. Biol., 10, 1985, No. 111, pp. 22-26. Lit. 11, 1 information sheet, 2 fig., 1 worksheet.

The question of suffering and pain in experiments on animals is solved. The animals are important for finding out toxicity of medicaments and for the development of new medicaments. The problem is solved for instruction, during which pupils discuss the question of experiments on animals.

didactics of biology, biology instruction, method of instruction, experiment, physiology + animal, nature conservation, law, FRG - 147309.

229. SCHNEIDER, H.- HUTTENLAU, E.:
Das Grundschulkind versucht sich an Tieren /The relation of basic school child to animals/
Prax. der Naturwiss. - Biol., 10, 1985, No. 111, pp. 13-16. Lit. 17, 2 fig., 1 worksheet, 3 tab.

The authors discuss the educational significance of pupils' care for domestic animals, which leads to toleration to other animals. They stress responsibility and respect of man towards animals, and warn before the relation to animal as to a toy. Research is directed to pupils' attitude to animals. An instruction model of five experiments is suggested.

didactics of biology, biology instruction, method of instruction, experiment, basic school, FRG - 147309.

230. SCHWARTZ, E.:
Über die Eignung von Glas- und Kunststoffwägegefässen bei der Bestimmung von Trockenmasse und Wassergehalt

/About suitability of glass- and plastic weighing vessels for examining dry mass and water content/
Der math. und naturwiss. Unterr., 38, 1985, No. 6, pp. 360-362. Lit. 2, 2 fig.

Suitability of glass and plastic vessels for examining dry mass and water content in biologic material is the theme of the article.

didactics of biology, biology instruction, method of instruction, experiment, dry substance, content + water, FRG - 147309.

231. SLÍPKA, M.:
Některé pokusy v přírodovědě /Some experiments in natural science/
Komenský, 109, 1984-1985, No, 10, pp. 598-601.

The author deals with experiments to the theme Soil, soil permeability, soil fertility, significance of humus in soil, etc. Experiments are meant for science instruction in 4th form of basic school.

didactics of biology, biology instruction, method of instruction, experiment, soil, basic school, 1st grade, 4th class, Czechoslovakia - 147309.

232. STRALLER, B.:
Anpassung des Blattbaus an die Wasserversorgung /Adaptation of plant leaves to water supply/
Prax. der Naturwiss.-Biol., 34, 1985, No. 2, pp.32-36.

1 fig., 1 worksheet, 1 model for foils, 1 tab.

In experimental instruction, adaptation of plant leaves to water supply of the plant is demonstrated. Foils with leaf anatomy illustrate various adaptation.

didactics of biology, biology instruction, physiology + plant, water + supply, plant nourishment, leaf, anatomy, method of instruction, experiment, FRG - 147309.

233. VOGES, M.:

Experimentelle Untersuchungen an Torf /Experimental examinations of turf/

Unterr. Biol., 9, 1985, No. 109, pp. 44-45.

The characteristics of turf is discussed. It can keep a large amount of water and does not lose this ability even after long droughts. Turf qualities are proved by means of experiments /temperature, acidity, etc./.

didactics of biology, biology instruction, botany, turf, method of instruction, experiment, FRG - 147309.

234. SUCHOVA, T.S.:

Nekotoryje uslovija povyšenija effektivnosti biologičeskogo eksperimenta pri obučenii /Some conditions of effectivity increase in experiments during instruction/

Biol. v Škol., 59, 1985, No. 5, pp. 38-41.

In botany in the 5th form, the teaching syllabi demand a large number of experiments. The article deals with didactics of experiments. Experiments lead pupils to to independent work and increase effectivity of instruction.

didactics of biology, biology instruction, method of instruction, experiment, USSR - 147309.

10 Biology instruction media

235. DANDAROVÁ, V.:

Učebné pomócky pre praktické cvičenia z biológie /Teaching aids for practical exercises in biology/

Přír. vědy ve Šk., 26, 1984-1985, No. 2, pp. 50-51.

The author analyses means of instruction for practical exercises in botany. There are 3 groups of them: - live material, -chemicals and - instruments. It is described how to obtain genuine objects for botany instruction, how to look after them, how to use them.

didactics of biology, biology instruction, means of instruction, botany, practical exercise, Czechoslovakia - 147311.

236. PUGALOVÁ, N.A.:

Další zdokonalování učebních pomůcek pro biologii v SSSR

Učební pomůcky ve Šk. a Osv., 24, 1984-1985, No. 1, pp. 3-5. 5 photos.

The system of teaching aids changes all the time, develops in agreement with the changes of instruction content. Old and insuitable parts are removed. The author prefers genuine aids /natural/ to their substitutes, she classifies teaching aids and their importance.

didactics of biology, biology instruction, means of instruction, method of instruction, USSR - 147311.

10.2.3 Living nature corners in schools

237. ANDREEVA, A.D.:

Ugolok živoj prirody v škole /Living nature corner in school/

Biol. v Šk., 50, 1985, No. 6, pp. 70-71.

Living nature corner is a necessary part of biology classroom. It enables observation, supplies working material and material for experiments. Pupils like to work in these corners. The author describes how to get materialfor the corners - in the surroundings, during excursions.

didactics of biology, biology instruction, means of instruction, living nature corner, USSR - 147311.

238. WOHLAND, G.:

Unsere Schildkröten versorgen die Pflanzen /Our tortoises provide for our plants/

Unterr. Biol., 9, 1985, No. 106, pp. 34-37. 4 fig.

The author describes successful connection of breeding of water tortoises and growing of plants in the school. Tortoises' dung is used for fertilizing and water for watering the plants. The pupils can see mechanisms in nature.

didactics of biology, biology instruction, means of instruction, living nature corner, breed, reptiles, growing + plant, FRG - 147311.

10.2.6 Breeding animals in schools, breeding facilities, collecting animals. Animal collection calendars

239. CIBULKA, J.:

Zlatá přadlena /The Golden Weaver/

ABC mladých Tech. a přírodovédců, 29, 1984-1985, No.14, p. 13, 3 photos.

Breeding of silkworm is described, its types. In China there are 300 types of them. Significance of the breeding is described.

didactics of biology, biology instruction, zoology, invertebrates, insect, breeding + animal, Czechoslovakia - 147311.

240. DYLLA, K.:

Der Gabelschwanz im Biologieunterricht - Eine Unterrichtsanregung /Cerura in biology instruction - a hint for instruction/

Unterr. Biol., 9, 1985, No. 104, pp. 45-47. Lit. 6, 1 information sheet, 1 worksheet, 1 tab.

It is quite easy to keep Cerura in school. Beside biological observations of insect metamorphosis, it is possible to prepare other interesting observations and experiments. The author describes his experience with the butterfly.

dodactics of biology, biology instruction, zoology, invertebrates, insect, living nature corner, breeding + animal, FRG - 147357.

241. DYLLA, K.:

Zur Biologie einer Art; Der grosse Gabelschwanz. Ein wissenschaftliches Unterrichtsmodell für die Sekundarstufe II. /To the biology of a species: Cerura. A scientific model for secondary grade II/
Unterr. Biol., 9, 1985, No. 104, pp. 37-44. Lit. 21, 4 fig., 6 worksheets, 1 tab.

The observations of Cerura are used for instruction, description is included.

didactics of biology, biology instruction, zoology, invertebrates, insect, breeding + animal, observation, secondary school, FRG - 147357.

242. GEE, A.:

Caring for Caterpillars
Teaching Sci., 3, 1985, No. 2, pp. 10-11. 5 fig.

The article informs about breeding insect, breeding of butterflies from eggs, over caterpillars, pupae to imagos. A special attention is paid to the care for pupae in winter. Directions for studying caterpillars are added.

didactics of biology, biology instruction, zoology, invertebrates, insect, breeding + animal, insectarium, Great Britain - 147311.

243. GUROVA, R.A.:

O vozmožnostjach optičeskoj raboty s tutovym šelkoprjadom v učeničeskich brigadach /On possibilitie of experimental work with silkworm and pupils´ work with the breeding/

Biol. v Škol., 59, 1965, No. 5, pp. 69-71.

In Uzbekistan pupils partake in breeding silkworm. The work is described, result of it, experiments with silkworm, effect of temperatures on the development of eggs and caterpillars, etc.

didactics of biology, biology instruction, zoology, invertebrates, insect, breeding + animal, secondary school, pupil + voluntary work, USSR - 147311.

244. HOEHL, E.:

Nachtpflauenaugen im Klassenzimmer. Wie Grundschulkinder den Entwicklungskreislauf anschaulich miterleben /Saturnia pyri SCHIFF in classroom. How the basic-school pupils observe the meramorphosis of the butterfly/

The breeding of Saturnia pyri SCHIFF in a basic school is described. It is used for observation of the evolution of butterflies. The breeding takes place in the classroom, which is not a difficult thing. Children are interested in our biggest night butterfly.

didactics of biology, biology instruction, zoology, invertebrates, insect, breeding + animal, basic school, FRG 147357.

245. KOPSKÝ, V.:

Drobné záhady přírody /Little mysteries of nature/

Věda a Tech. mládeži, 39, 1985, No. 13, pp. 12-13. 5 fig.

Swarming of bees and life of Apis mellifera are described. Relations between swarming and temperature and bees' economy concerning warmth are discussed. The theme is suitable for 6th form of basic school.

didactics of biology, biology instruction, zoology, invertebrates, insect, bee-keeping, Czechoslovakia - 147311.

246. KŮS, E.:

Pražská zoo 40 let úspěchů /Prague ZOO after 40 years of success/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 18, pp. 16-17. 7 photos.

The work of Prague zoological garden during the last 40 years is described, and important breeding successes introduced.

didactics of biology, biology instruction, breeding + animal, zoological garden, Czechoslovakia - 147311.

247. KŮS, E.:

Zdomácňujeme v zoo divoká zvířata /In zoo we domesticate wild animals/

Věda a Tech. mládeži, 39, 1985, No. 14, pp 26-27. 3 photos.

The number of endangered animals grows and zoological gardens receive a new task: quite a lot of wild animals kept in zoological gardens are already domesticated. The author speak about them and describes some anatomical, morphologic and ethologic changes which have occurred in these animals.

didactics of biology, biology instruction, breeding + animal, zoological garden, Czechoslovakia - 147311.

248. LEUBERT, F. - TEUBNER, M.:

Haltung und Zucht der Stubenfliege Musca domestica /L./

/Keeping and breeding of the house fly Musca domestica /L./

Biol. in der Sch., 34, 1985, No. 6, pp. 239-242. Lit. 5, 1 fig.

A suitable object for breeding in school is the fly. The authors describe the way of breeding, they observe the individual development and getting eggs, larvae and pupae for breeding.

didactics of biology, biology instruction, zoology, invertebrates, insect, breeding + animal, 6th class, GDR -

147311.

249. LOHNISKÝ, K.:

Chov čichavce perleťového /Breeding of Trichogaster leeri/

Živa, 33, 1985, No. 3, p. 108. 7 photos.

This species belongs to Anabantidae, originating in southeast Asia. Their morphology, biology, spawning, feeding of the young is described. It is suitable for breeding in school aquarium and observing.

didactics of biology, biology instruction, zoology, fish, aquarium, Czechoslovakia - 147357.

250. PAVEL, O.:

Ochrana pokusných a laboratorních zvířat /Protection of experimental and laboratory animals/

Vesmír, 64, 1985, No. 9, p. 496.

In Czechoslovakia, a decree determines treating of animals. It follows the act No. 66 from 26.5.1961 concerning veterinary care. Basic parts of the act are introduced.

didactics of biology, biology instruction, zoology, laboratory animal, breeding + animal, law, Czechoslovakia - 147311.

251. Pokusná zvířata /Experimental animals/

Vesmír, 64, 1985, No. 2, p. 85.

Since 1628 man has been using animals as object of studies. In 1628 William Harvey used an animal when he examined blood circulation. In 1978 in USA 20 million of animals were used for scientific and medical experiments /95 per cent of them were rats and mice and other rodents, 1 - 2 per cent cats and dogs, and 1 per cent primates. The problem of experimental animals is studied together with the question of nature conservation and directions for treating of laboratory animals are given.

didactics of biology, biology instruction, zoology, laboratory animal, Czechoslovakia - 147311.

252. PONTINA, J.S.:

Population Density, Growth, and Developmental Time of House Fly Larvae

The Amer. Biol. Teacher, 47, 1985, No. 4, pp. 401-402. 3 fig.

The development of house fly /Musca domestica L./ is described, time of the development of larvae, influences of growth on population, technique of breeding. Further description applies to population density, growth and time of development. At the end of the article we find hints for laboratory exercise: weighing of larvae and pupae in every 24 hours.

didactics of biology, biology instruction, invertebrates, insect, breedin + animal, observation, experiment, laboratory exercise, USA - 147311.

253. Proč nejsou akvarijní želvy ozdobou akvária /Why are aquarium tortoises no decoration of an aquarium/
ABC mladých Tech. a přírodovědců, 29, 1984-1985,
No. 12, p. 6. 1 fig.

Breeding of water tortoises in aquarium and difficulties with it are described. Introduced is Pseudemys scripta elegans and its breeding. It is a carnivorous water tortoise eating small fish and meat and demanding vitamins.

didactics of biology, biology instruction, zoology, reptiles, breeding + animal, aquarium, Czechoslovakia - 147331.

254. SCADDING, S.R.:
How to Culture Chicken Embryos in Plastic Wrap Suspension
The Amer. Biol. Teacher, 47, 1985. No. 2, pp.107-108.
Lit. 4, 2 photos.

Breeding of chicken embryos and their development without eggshell in plastic wrap suspension is described. Embryos can be bred in Petri dishes or in a special glass with glass rings. The author describes the perromance of the experiment, observation of the embryo genesis, and a discussion with pupils.

didactics of biology, biology instruction, zoology, birds, sexual reproduction, observation, experiment, Great Britain - 147311.

255. SMRČEK, M.:

Chováme papoušky I /Breeding parrots I/

Ze života skvělých ptáků /From the life of precious birds/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 15, pp. 18-19. 3 photos, 3 fig.

Breeding of parrots /order Psittaciformes/ is described. We know on the whole 320 species of 11 families. This article informs about Micropsittacidae, Psittacidae and Platycercidae. Breeding, breeding cages, feeding and nursing are discussed.

didactics of biology, biology instruction, zoology, breeding + animal, birds, Czechoslovakia - 147311.

256. SMRČEK, M.:

Chováme papoušky II /Breeding parrots II/

Zástupci rodu Agapornis /Representants of genus Agapornis/

ABC mladych Tech. a přírodovědců, 29, 1984-1985, No.16, pp. 18-19. 3 photos.

These parrots live in Africa and Madagascar. They have a strong plump body, a short tail and a mighty head. Breeding and nesting is described, and well known species introduced.

didactics of biology, biology instruction, birds, breeding + animal, Czechoslovakia - 147311.

257. SMRČEK, M.:

Chováme papoušky IV /Breeding parrots IV/

Alexandři a mníšek šedý /Psittaculae and Myiopsitta monachus/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 18, pp. 18-19.

Breeding of Psittaculae and Myiopsitta monachus is described, their breeding in pairs, nesting boxes and food of these big parrots.

didactics of biology, biology instruction, zoology, birds, breeding + animal, Czechoslovakia - 147311.

258. SMRČEK, M.:

Chováme papoušky V /Breeding parrots V/

Rosely a jejich příbuzný /Rosellas and their relative/

ABC mladých Tech. a přírodovědců, 29,1984-1985, No. 19, pp. 18-19, 3 photos.

Rosellas belong to Australian and Tasmanian parrots. For breeding, large cages must be used. Breeding, nesting, food and species are described.

didactics of biology, biology instruction, zoology, birds, breeding + animal, Czechoslovakia - 147311.

259. SMRČEK, M.:

Chováme papoušky " /Breeding parrots VI/

Neofény /Neophenes/

ABC mladých Tech. a přírodovědců, 29,194-1985, No.20, Australian and Tasmanian grass parrots, their breeding, reproduction, nesting and food are described.

didactics of biology, biology instruction, zoology, birds, breeding + animal, Czechoslovakia - 147311.

260. STEHLÍK, J.:
Umělé odchovy rysa ostrovida v ostravské zoo /Artificial breedings of Lynx lynx L. in Ostrava zoo/
Živa, 33, 1985, No. 6, pp. 232-233. 2 photos.

For 20 years the zoo in Ostrava has been breeding Lynx lynx L. To the end of 1985 24 young ones have been brought up. Conditions of successful breeding are described.

didactics of biology, biology instruction, zoology, mammals, breeding + animal, zoological garden - 147311.

10.2.7 Cultivating plants, hydroponics, fertilizing

261. Jak naložit se semeny /How to handle seeds/
ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 13, p. 6. 1 photo.

The editors of the periodical were sending out seeds of Ipomoea purpurea, which has been grown in gardens since 17th century. It comes from Middle America, its blossom has 8 cm in diameter. It is a creeper suitable for school experimental grounds.

didactics of biology, biology instruction, botany,

262. JONES, J.B.:

Growing Plants Hydroponically

The Amer. Biol. Teacher, 47, 1985, No. 6, pp.356-359.

Lit. 2, 2 photos, 1 fig.

Hydroponic growing of plants and their use in biology instruction is described. Hydroponic cultures are explained to students by means of the problem of nutrition of plants. Students are acquainted with fundamental knowledge about nutrition of plants, about the law of minimum, etc.

didactics of biology, biology instruction, botany, physiology + plant, hydroponics, USA - 147311.

263. MARKOVÁ, J.:

Zkuste pěstovat citrusy /Try to grow citruses/

Věda a Tech. mládeži, 39, 1985, No. 2, p. 25. 2 photos.

Citruses and lemon trees are described, esp. Citrus limon. To citruses belong orange trees, tangerine trees, grapefruit trees, etc. Their demands on environment and reproduction by seeds, cuttings and inoculation are rather great.

didactics of biology, biology instruction, botany, growing, Czechoslovakia - 417311.

264. MARKOVÁ, J.:

Zkuste pěstovat citrusy II /Try to grow citruses II/

Věda a Tech. mládeži, 39, 1985, No. 3, p. 25. 2 photos

Continued from No. 2 - discussed are the demands of citruses on soil and air humidity, on nutrition and fertilizing. Grafting and inoculation are described. Seedlings are inoculated after 10 to 12 years, grafting is possible after 3 years. Inoculation is a more difficult way of reproducing citruses.

didactics of biology, biology instruction, botany, growing, inoculation, quilting, Czechoslovakia - 147311.

265. OŚWIECIMSKI, W.:

Nawozenie organiczne i mineralne w ogrodzie szkolnym /Organic and mineral fertilizers in school garden/

Biol. w. Szk. 38, 1985, No. 1, pp. 39-46. Lit. 4, 5 tab.

One of the important factors of fertility of soil are fertilizers. The author describes possibilities of organic and mineral fertilizers in school grounds. He stresses the use of organic fertilizers, composts, tree bark, household remnants, stable manure, etc. Mineral fertilzers are obtainable in Poland, they are described.

didactics og biology, biology instruction, growing, school grounds, fertilizers, fertilizing, Poland - 147311.

266. SEIDLER, M.:

Składniki mineralne w zyciu rośliny / Mineral substances in the life of plants/

Biol. w Szk., 38, 1985, No.3, pp.147-150. Lit. 3, 3 tab.

History of opinions of plant nutrition has developed since Aristotle who said that plants accept water and nutrition only from soil, to newer opinions of 18th century /Thaer, 1752-1828/ and 19th century /Liebig, 1803- 1873/. Liebig determined the minimum law which influenced fertilizing with natural and artificial fertilizers. The analysis of plant ashes led to discovering of elements necessary for plant life. Mineral substances form 1 per cent of fresh mass. Functions of individual mineral substance in plants are described. Lack of certain mineral substances leads to physiologic diseases. The theme is suitable for schools.

didactics of biology, biology instruction, physiology + plant, fertilizer, Poland - 147311.

267. SKOWROŃSKI, Z.:

Doświadczenia z nawozeniem roślin /Experiments with plant fertilizing/

Biol. w. Szk., 38, No. 3, pp. 171-176. Lit 12.

In 3rd form of secondary school of general education, stream biology-chemistry, there is a theme called Physiologic significance of macro- and microbiogenetic elements in soil. The author describes planning and experiments in plant fertilizing. The results have been written down and exhibited in school.

didactics of biology, biology instruction, physiology + plant, fertilizing, fertilizers, experiment, secondary school, Poland - 147311.

268. TRUHLÁŘ, V.:

Chcete sklízet jižní ovoce? /Would you like to gather southern fruits?/
ABC mladých Tech. a přírodovědců, 29,1984-1985, No. 4, p. 18. 2 photos.

The author describes growing of citruses and what to do to make them thrive, receive enough light, humidity and warmth. Suitable nutrition and soil reaction are described.

didactics of biology, biology instruction, growing + plant, angiosperms, Czechoslovakia - 147311.

269. TRUHLÁŘ, V.:

Jak pěstovat kávovník a čajovník /How to grow Coffea arabica and Thea sinensis L./
ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 18, pp. 18-19. 2 photos.

Growing of Coffea arabica and Thea sinensis, their demands on light, warmth, environment and soil are described.

didactics of biology, biology instruction, growing + plant, angiosperms, Czechoslovakia - 147311.

270. TRUHLÁŘ, V.:

Jak pěstovat mučenku? /How to grow passion-flower?/
ABC mladých Tech. a přírodovědců, 29, 1984-1985, No.23, p. 18.

Passion flowers of family Passifloraceae are grown from seeds, but is is also possible to use cuttings. Cuttings must be 10 cm long. It is possible to crossbreed. Demands of passion-flowers on soil, humidity of soil are introduced.

didactics of biology, biology instruction, growing + plant, reproduction + plant, angiosperms, Czechoslovakia - 147311.

271. TRUHLÁŘ, V.:

Jak pěstovat opuncie? /How to grow nopal?/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 24, p. 18. 2 fig.

Nopals /Opuntia ficus indica/ come from Middle America, from where they were tranferred to Mediterranean region. They are grown for decoration, as well as for delicious fruits. Nopal is from 1 to 4 m high, has prickles, blossoms twice a year. Fruit is shaped and big as a plum. In our country they can be grown from seeds in hothouses or houses. Suitable for interest groups of growers.

didactics of biology, biology instruction, growing + plant, angiosperms, Czechoslovakia - 147311.

272. TRUHLÁŘ, V.:

Jak pěstovat tomel? /How to grow tomel/

ABC mladých Tech, a přírodovědců, 29, 1984-1985, p.18. 1 photo.

Tomel, /kaki, churma/ has acrid fruits, which get sweet after some time of storage. They remind of tomatoes, contain C vitamin. Growing of Diospyros kaki from family Ebenaceae is described .

didactics of biology, biology instruction, growing + plant, Czechoslovakia - 147311.

273. TRUHLÁŘ, V.:

Jak štěpovat /How to quilt/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No.10, p.19. 1 fig.

Various ways of quilting and grafting are described.

didactics of biology, biology instruction, growing + plant, asexual reproduction, quilting, Czechoslovakia - 147311.

274. TRUHLÁŘ, V.:

Je možno u nás pěstovat banány? /Is it possible to grow bananas in our country?/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No.16, pp. 18-20. 1 photo.

The author describes growing of bananas /Musa paradisiaca, Musa sapientum a Musa phinensis/ of family Musaceae. In our country they can be grown only in large warm hothouses.

didactics of biology, biology instruction, growing + plant, hothouse, angiosperms, Monocotyledones - Czechoslovakia - 147311.

275. VOLKOVA, G.V.:
Lekarstvennyje rastenija na školnom učebno-opytnom učastke /Herbs pn school experimental grounds/
Biol. v Šk., 58, 1985, No. 4, pp. 56-57.

It is important to grow herbs not only as a contribution to national economy, but also for instruction reasons /botany, agrotechnique/. Directions for preparing soil, flower beds, fertilizing are included.

didactics of biology, biology instruction, growing+plant, herb, school grounds, USSR - 147311.

10.2.7.1 A school plot, botanical garden, young naturalists stations. School biology centres, school forestry areas, instructional trails, Alpine rockeries, Pioneer houses

276. BANNOVA, N.N. - DOMOROSLAJA, M.B.:
Rokarij na školnom učastke /Rockery on school grounds/
Biol. v Šk., 58, 1985, No. 6, pp. 68-70. 3 fig.

For decoration of school grounds it is possible to build a rockery in a suitable place. Rockery needs bigger stones and rocks, which must be aptly placed and connected with plants, various species of grass, bushes and shrubs. It is also possible to create miniature plant communities. We choose plants so that all the time some of them were in blossom.

didactics of biology, biology instruction, growing + plant rockery, school grounds, USSR - 147311.

277. ČACHOVSKIJ, A.A. - NIKOLAJEVA, V.A.:

Rekomendacii po sozdaniju školnogo dendrarija i organizacii v nem opytničeskoj raboty učaščichsja /Recommendations for arranging a dendrarium for experimental pupil work/

Biol. v Šk., 59, 1985, No. 1, pp. 60-65. 3 tab.

Dendraria are an important basis for research work from the aspect of their arranging, acclimatization and spreading of rare species of trees. Presently dendraria are arranged in the vicinity of schools. Dendrarium can be used for work with pupils. It is rightly suggested to arrange dendrariums according to regional geographic principles and to respect assignments of school biology.

didactics of biology, biology instruction, growing + plant, dendrology, school grounds, experiment, USSR - 147311.

278. ČEŘOVSKÝ, J.:

Neobvyklá alpina /Unusual alpinums/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No.12, pp. 18-19. 2 photos, 1 fig.

Problems of stones in alpinum choice and planting of alpines, which are suitable for school grounds.

didactics of biology, biology instruction, school grounnd, alpinum, Czechoslovakia - 147311.

279. ČEŘOVSKÍ, J.:
Neobvyklá alpina II /Unusual alpinums II/
ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 13, p. 13, 3 photos, 1 fig.

The building of a stony terrace for alpinum and planting of suitable plants.

didactics of biology, biology instruction, school grounds, alpinum, Czechoslovakia - 147311.

280. DOČKAL, J.:
Brána do světa zvířat a rostlin /Gate to the world of animals and plants/
ABC mladých Tech. a přírodovedců, 29, 1984-1985, No.19, pp.8-9. 4 photos.

Children and youth Pioneer house in Cheb has many interest circles. Breeding group works very well. It keeps rabbits, aquarium fish, 90 birds, hamsters, mice, reptiles and amphibians. The house has also its own botanical garden of 3 hectares.

didactics of biology, biology instruction, breeder, aquarium, gardening, Czechoslovakia - 147311.

281. KALEGANOV, A.A.:
Kak vyrastit plodovyje derevja stlancevoj formy /How

to grow fruit trees creepers/

Biol. v šk., 59, 1985, No. 6, pp. 67-68. 1 fig.

A wide growing of fruit trees in some areas of USSR is hindered by their low frost resistance. In cold areas it is therefore necessary to grow tree creepers. In winter, snow protects them before freezing. The author describes ways of shaping which enable that the tree crown lies on the ground. Such tree creepers can bear as much as 40 degrees C below zero under a 15 - 20 cm deep snow cover. Directions for shaping are added.

didactics of biology, biology instruction, pomology, shaping, USSR - 147311.

282. LAGUTINA, E.I.:

Učebno-opytnyj učastok - škola trudovych navykov /School experimental ground - school of work habits/

Biol. v Šk., 59, 1985. No. 5, pp. 71-73.

School reform demands improvement of pupils´ labour education, polytechnical education and connection of school with practice. An important factor is work on school experimental grounds. The work is planned, every working phase has its reason and is evaluated. The author describes experiance of a school.

didactics of biology, biology instruction, school grounds, labour education, USSR - 147311.

283. MELNIK, K.V.:

Najti učaščimsja trudovoje tvorčeskoje delo / To find

a possibility of creative work for pupils/
Biol. v Šk., 59, 1985, No. 1, pp. 59-60.

Teacher of biology and labour education in Žitomir region publishes his memoirs of his own school years in the hard times of World War II. He speaks about his experience with gaining pupils for interesting and creative work on the school experimental grounds. It is a complex of various activities belonging to one theme of biology instruction.

didactics of biology, biology instruction, school grounds, socially profitable work, USSR - 147311.

284. OREŠKIN, A.M.:
Povyšat rol stancij junych naturalistov v praktičeskom osuščestvlenii reformy školy /To increase the assignment of the stations of young naturalists in practical realization of school reform/
Biol v Šk., 59, 1985, No. 3, pp. 46-53.

Stations of young naturalists organize not only biologic and experimental work of pupils on the stations, they also develop activities in forestery, coordination of ecologic work and development of general labour education. These stations cooperate with schools, prepare methodical materials for them, seminars and courses.

didactics of biology, biology instruction, station of young naturalists, reform + school, USSR -147311.

285. SAWIŃSKI, J.P.:

Pas zieleni wokół szkoly /Green belt around the school/

Biol. w. Szk., 38, 1985, No. 3, pp. 176-181. Lit. 20, 1 fig.

The author stresses how important is greenery in towns, because it enables contact between pupils and nature. The author describes activities leading to securing such greenery for new housing sites, like parks, orchards, gardens, lawns. He describes trees and bushes suitable for cities and towns where they must stand air pollution. Also schools have their tasks at the arrangement and maintenance of greenery.

didactics of biology, biology instruction, environmental control, socially profitable work, greenery + city, town, Poland - 147311.

10.2.7.2 Exhibitions

286. LOPEX, M.:

"Apprendre a se nourrir" /Learn to feed yourselves correctly/

Biol.-Geol., 72, 1985, No. 4, pp. 775-794.

The author describes her exhibition on health care education, organized in 1984, namely education leading to correct nutrition. The exhibition is devoted to pupils and biology teachers of secondary schools.

didactics of biology, biology instruction, health care education, nutrition, exhibition, secondary school, France - 147311.

10.3.3 Herbariums

287. SCHMIDT, R.C.:

Pflanzenpresse im Selbstbau /Plant press of one´s own production/

Unterr. Biol., 9, 1985, No. 105, p.55. 2 fig.

Directions are given how to make a press for herbarium. It is meant for pupil works on school grounds.

didactics of biology, biology instruction, means of instruction, herbarium, work on the grounds, FRG - 147311.

10.4 Entomological preparations

288. BEČVÁŘ, Z.:

Péče o inventář přírodopisného kabinetu /Looking after inventory of natural history and natural science room/

Přír. vědy ve Šk., 36, 1984-1985, No.9, pp.331-332. Lit. 5.

Maintenance of collections of entomologic objects and dermoplastic preparations is described. In natural history cabinets there are some irreplaceable objects, like dermoplastic preparations of birds of prey, owls and other animals, which today are protected, or like entomologic preparations needing regular maintenance and protection against light, dust, etc.

didactics of biology, biology instruction, entomology, dermoplastic preparations, cabinet, Czechoslovakia - 147311.

289. SAMŠIŇÁK, K.:

Sbírka brouků K. V. Raise /K. V. Rais´s collection of beetles/

Živa, 33, 1985, No. 3, p. 101.

The Czech novelist K. V. Rais collected beetles and had a collection, as he writes in the 2nd part of his memories /Ze vzpomínek II, 23rd part of collected works/. The collection has a list of localities. Some species of insect do not exist in these localities any more. Rais paid attention to striking species.

didactics of biology, biology instruction, nature object collection, insect, Czechoslovakia - 147311.

10.4.2 Dissection of animals

290. DIRKS, B.:

Präparation einer Schweineniere /Preparation of pig´s kidney/

Unterr. Biol., 10, 1985, No. 111, p. 54. 2 fig.

Analysis and preparation of pig´s kidney is described - it is suitable for the theme Nutrition and digestion, construction and function of kidneys. The author has suitable suggestions for instruction.

didactics of biology, biology instruction, dissection, kidney, FRG - 147309.

291. RICHTER, D.:

Paraffin-Embedded Biology Specimen

The Amer. Biol. Teacher, 47, 1985, No. 2, pp.103-104.
2 photos, 1 tab.

The author informs about using of paraffin for plant and animal conservation in school collection /fungi, fish, mammals, etc./. It is necessary to remove water from the objects and substitute paraffin. After water has been removed, the object is put in melted paraffin. Suitable concentration of alcohol for water removing and hours necessary for individual phases of paraffination are added.

didactics of biology, biology instruction, conservation, nature object, USA - 147309.

10.5 Multiplications and collections of nature objects

292. KOZLOV, M.A. - NINBURG, J.M.:

Kak oformit zoologičeskuju kollekciju /How to arreange zoological collection/

Biol. v Šk., 59, 1985, No. 3, pp. 34-38. 6 fig, 1 tab.

The constribution answers to a teacher's request concerning the arrangement of school zoological collections. The authors remind the necessity to keep to the Act on nature conservation and recommend to collect only harmful species of insect, empty shells of moluscs, eventually certain species of plants. Preparation of animals and plants is described, as well as the making of terrariums and aquariums.

didactics of biology, biology instruction, means of instruction, collection of nature objects, USSR - 147311.

10.5.2 Microscopy specimens of animals and those pertaining to human biology

293. DALLMEYER, M.:

Der Kohlweissling unter die Luppe genommen /Cabbage white butterfly under the magnifying glass/
Unterr. Biol., 9, 1985, No. 104, pp. 17-19. Lit. 7, 1 fig, 1 worksheet.

The author suggests usung an example of didactic type of cabbage white butterfly for instruction of butterfly morphology. Microscopic preparation of scales on wings and proboscis is made. Every preparation time equals one instruction period. Observations are connected with explanation and drawings.

didactics of biology, biology instruction, means of instruction, zoology, insect, micropreparation - insect, FRG - 147311.

10.5.4 Palaeontological animal material

294. RICKE, J.:

Fosilien bergen und präparieren /Storage and preparation of fossils/

Unterr. Biol., 9, 1985, No. 105, pp. 52-53. Lit.2,6 fig.

Various fossils are necessary as a proof of evolution in instruction, The author describes how to look for them in loose, soft and hard soils, their preparation and storage in storage rooms. The was of protection against damage is described.

didactics of biology, biology instruction, means of instruction, palaeontology, fossil, storage room, FRG - 147311.

10.6.1 Models

295. Equipment news

J. of Biol. Educ., 19, 1985, No. 2, pp. 113. 2 photos.

For biology instruction, the Firm Griffin and George Ltd. have produced a model of the apex of the root with a lengthwise section demonstrating rootcap, development of xylem and cotex, and roothair. Another model is that of human ear, with a diagram with description. A collection includes 8 parasites of man, another one flora and fauna of rocky seaside, plants and animals of sandy bottom, swampy seaside and mouth of rivers, organisms of ponds, lakes, rivers. These collections are for modern school instruction. There are also collections of blood groups of man, model DNA, and similar aids.

didactics of biology, biology instruction, means of instruction, model, Great Britain - 147311.

296. McFARLAINE, P.:

A model circulation system

J. of Biol. Educ., 19, 1985, No. 1, p. 16. 1 fig.

It is possible to make a model circulation system by the help of a simple electronic circuit, the plan of which is added.

didactics of biology, biology instruction, model, blood circulation, Great Britain - 147311.

297. HILL-COTTINGHAM, M.P.:

Models of a nephron and villus

J. of Biol. Educ., 19, 1985, No. 2, pp. 103-105. 3 fig.

The author informs about the model of nephron, fundamental unit of a kidney, and the model of a villus of small intestine; the models are big enough to enable demonstration in classroom. Pupils make the model themselves as described.

didactics of biology, biology instruction, means of instruction, model, human biology, kidney, digestion system, Great Britain - 147311.

298. MARCHIONI, W.:

High Rise Learning: The Vertical Maze

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 430 - 431. Lit. 2, 3 photos.

l vertical maze and its building prepared for studies of rats and their teaching is described. It serves to the observations in classroom, pupils can stay in their places. The training of rats and their behaviour in the maze is described.

didactics of biology, biology instruction, model, ethology, mammals, USA - 147311.

299. POKORNÝ, M.:

Jak /a proč/ se dělá nosorožec /How - and why - a rhinoceros is made/

Věda a Tech. mládeži, 39, 1985, No. 20, p. 20. 3 fig.

The rhinoceros, belonging to Prague National Museum collections, from collections of Dr. Emil Holub, was damaged. The museum workers got the task to produce a new demonstration preparation. It is possible to do this after the body of the dead and of a live rhino. Production of the model is described: the production took 3 years. The weight is 80 kg.

didactics of biology, biology instruction, means of instruction, model, mammals, museum, Czechoslovakia - 147311.

300. RICKEN, W.:

Wie lassen sich Zellformen im Unterricht der Klasse 7 veranchaulichen? /Ho to demonstrate objectively cell forms in 7th class?/

Biol. in der Sch., 34, 1985, No. 7/8, p. 294. Lit. 1, 1 fig.

Using pictures from textbooks and micropreparations lead to the fact, that pupils do not realize three dimensions of the cell. To improve their knowledge, the author uses a combination of micropreparations and paper models.

didactics of biology, biology instruction, cell, micropreparation, model, basic school, 7th class, GDR - 147311.

301. POPPLEWELL, J.:

Surface area of the lungs kit

J. of Biol. Educ., 19, 1985, No. 1, pp. 17-18.

The inner surface of lungs is 90m^2, the same as a tennis court. It is difficult for the pupils to understand this. The author suggests to work out the inner space of lungs. The equipment is composed of 38 m of cord with knots of three colours placed in 9.5 m intervals. 194 double newspaper sheets, 2times 1m^2 of newspaper paper, 2times 1 m^{2}of wrapping paper, two times 1 m^2 of thin plastic. Another model shows the thinness of epithelium. Both models are produced by pupils.

didactics of biology, biology instruction, means of instruction, model, breathing system, Great Britain - 147311.

302. WENTWORTH-PERCY, D.:

Making a Model Biogas Generator

The Aust. Sci. Teachers J., 31, 1985, No. 2, pp. 49-51. 1 fig, 1 tab.

Present time tries to look for new sources of energy, because supplies of fossil fuels fall down. The goal of instruction is to build a biogas generator. The instruction shows building of an easy equipment, used in Australian farms for household heating and lighting.

didactics of biology, biology instruction, means of instruction, model, biotechnology, Australia - 147311.

10.6.2 Imprints and casts

303. KENT, D.M.:

A New Moulage Technique for Casting Animal Tracks

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 432 - 433. Lit. 10.

Following animal tracks enables drawing conclusions about the occurrence of individual species. In soft soil, muddy soil, on the edges of lakes, ponds and rivers, after rain, and in snow we can find animal tracks, which show us something of the ethology of animals Drawing and casting of animal tracks is described.

didactics of biology, biology instruction, means of instruction, imprint + nature object, cast, USA - 147311.

10.7.1 Films /school films, film cassettes, popular science films, etc./

304. ROZENŠTEJN, A.M.:

K ispolzovaniju kinofilmov i kinofragmentov na urokach biologii /On films and film strips in biology instruction. Biol. v Šk., 59, 1985, No. 5, pp. 49-52.

The author propagates film strips, recommends to cut some longer films into suitable fragments and use the fragments in instruction. As far as didactics is concerned, work with film strips is more useful than with long film. The strip solves only one problem and takes only about 5 minutes.

didactics of biology, biology instruction, means of instruction, film, USSR - 147311.

305. SCHIEFER, H.:

Zum Einsatz von Unterrichtfilmen in der Abiturstufe /Using instruction films in the highest grade of secondary school of general education/

Biol. in der Sch., 34, 1985, No. 9, pp. 331-332. Lit. 2.

Means of instruction help to fulfil geven didactic and educational goals. It applies also for the 12th form. It is necessary to find out what didactic function the film has and in which phase of the period to use it. The author introduces a survey of films suitable for biology instruction in 12th form, and a brief content of the films.

didactics of biology, biology instruction, means of instruction, film, secondary school, 12th class, GDR - 147311.

10.7.2 Television and radio in schools

306. GREBEŇ, G.A.:
Plan učebnych televizionnych peredač po biologii na 1985-86 učebnyj god /Plan for school TV programmes for biology in school year 1985-86/
Biol. v Šk., 59, 1985, No. 4, pp. 41-42.

Department of popular scientific programmes of TV brings new programmes for biology instruction in the school-year 1985-86. Practical direction of programmes is stressed.

didactics of biology, biology instruction, means of instruction, television, USSR - 147311.

307. SCHUBERT, F.:
"Elektromagnetische Wellen" -im Biologieunterricht nutzbar! /"Electromagnetic waves" - useful in biology instruction!/
Biol. in der Sch., 34, 1985, No. 2/3, pp. 96-97.

For physics instruction there exists a TV programme called "Electromagnetic waves in the service of medicine". It is suitable for biology instruction, especially for 8th class. It makes the best use of interdisciplinary relations between physics and biology.

didactics of biology, biology instruction, television, human biology, GDR - 147311.

308. SCHUBERT, F.:

Hinweise zur Fernsehreihe für Klasse 10 /Allusions to TV programmes for 10th form/

Biol. in der Sch., 34, 1985, No.9, pp.333-337.

The author analyses the content of 3 TV programmes for biology teachers: "What are mutations", "From generation to generation" and "Identity and similarity". In each programme there are hints as to the possibilities of using it in biology instruction in the form of questions for pupils, of relation between theory and practice, motivation, etc.

didactics of biology, biology instruction, television, secondary school, 10th class, GDR - 147311.

309. SCHUBERT, F.:

Zur Fernsehsendung "Belegmaterial Fossilien", Klasse 10 /To TV programme for 10th class - Fossils as documentation material/

Biol. in der Sch., 34, 1985, No. 11, pp.429-430.

The novelty of this television programme is the role of the moderator as of a reader, and further the demonstration of a fish in motion. The author informs about the content of the programme, analyses his experience with it and suggests formulation of some tasks which can be solved by pupils during the watching of TV.

didactics of biology, biology instruction, means of instruction, television, secondary school, fish, 10th class, GDR - 147311.

310. SCHUBERT, F.:

Schulfernsehen im Schuljahr 1985/86 /TV programmes for schools in the year 1985/86/

Biol. in der Sch., 34, 1985, NO.7/8, pp. 295-297.

A brief tabular survey introduces time and length of the school TV programmes in 1985/86. There are 5 programmes for biology instruction in 5th form, 8 programmes for 9th form, and 7 programmes for 10th form. Titles are added.

didactics of biology, biology instruction, means of instruction, television, GDR - 147311.

311. SCHUBERT, F.:

Hinweise zur Fernsehsendung "Kode des Lebens"/Directions to TV programme "Life codes"/

Biol. in der Sch., 34, 1985, No.7/8, pp. 281-282.

The programme is devoted to biology instruction in 10th form, where genetics is taught. It includes five instruction periods related to molecular foundations of heredity. It lasts about 23 minutes. The author analyses its content and introduces results of its empirical verification.

didactics of biology, biology instruction, means of instruction, secondary school, 10th form, GDR - 147311.

312. TOMCZAK, R.:

Gedanken zur Auswertung von Fernsehsendungen im Unterricht /On using TV programmes in school instruction/

Biol. in der Sch., 34, 1985, No. 4, p.138.

Many pupils from higher classes watch nightprogramme on TV.Therefore it is good to recommend only such programmes which are suitable for reviving knowledge of biology. The author names examples of suitable programmes and the way of their using in biology instruction, especially in 8tn and 10th class.

didactics of biology, biology instruction, means of instruction, television, GDR - 147311.

10.7.3 Pictures, bas-rélief representation

313. Anatomie krávy /The anatomy of a cow/

ABC mladych Tech. a přírodovědců, 29, 1984-1985, No. 21, pp. 8, 10-13, 15. 11 fig., 2 tab.

It is a demonstration of cow anatomy. The pictures include details of anatomic structure of mammary gland, skeleton, and the like. Production of milk, milking and looking after milk are described. Suitable for 6th form of basic schools.

didactics of biology, biology instruction, means of instruction, Czechoslovakia - 147311.

314. BALDWIN, S.A.:

Educational palaeontological reproduction

J. of Biol. Educ., 18, 1985, No. 2, pp. 107-109. Lit. 10, 1 fig., 1 tab.

Since 1960, interest in evolution in biology and geology in the British educational system has been growing. A great interest is devated to the British action of "Brontosaurus". The author describes possibilities of fossils for school storage rooms of biology. Production of possil imprints is described.

didactics of biology, biology instruction, means of instruction, picture, fossil, palaeontology, imprint + nature object, Great Britain - 147311.

315.GULENKOVA, M.A.:

K ispolzovaniju tablic "Vegetativnyje organy rasstenij /To instruction pictures "Vegetative organs of plants/

Biol. v Šk., 59, 1985, No. 6, pp. 26-33. 3 fig., 2 tab.

The periodical brings didactic directions to the use of recently published pictures of vegetative organs of plants. It is a sequal to an article. In this part there are tables which show leaves, their position on the axis, the inner structure of leaves, vents, falling down of leaves.

didactics of biology, biology instruction, mean of instruction, picture, USSR - 147311.

316. ŠORINA, N.I.:

K ispolzovaniju tablic "Vegetativnyje organy rastenij" /To using the pictures "Vegetative organs of plants"/
Biol. v Šk., 59, 1985, No. 2, pp.36-46. 4 fig.

Recently published wall pictures of vegetative organs of plants are described.

didactics of biology, biology instruction, means of instruction, picture, USSR - 147311.

317. VOLOŠINOVA, J.V. - LEPINA, V.G.:

O trebovanijach k učebnym tablicam /On demands of instruction tablets/
Biol. v Šk., 29, 1965, No. 3, pp. 33-34.

Except official means of instruction, teachers use means of instruction which they have produced themselves or collectivelly. Tablets are often used. The authors give necessary information about preparing of such tablets and about demands on their didactic value.

didactics of biology, biology instruction, means of instruction, tablet, USSR - 147311.

10.7.3.1 Pictures attached to flannel sheets

10.7.3.2 Pictures attached to magnetic board

318. GRABY, R.:

Selbstständige Schülerarbeit bei Hilfe einer Folie /Independent work of pupils with foils/

Biol. in der Sch., 34, 1985, No.11, pp. 417-418. Lit. 1., 1 fig.

For quite many pupils it is difficult to apply instruction and find connections in instruction. The article describes a foil, which is a worksheet for every pupil.

didactics of biology, biology instruction, means of instruction, transparency, biology, human biology, 8th class, basic school, GDR - 147311.

319. HEINZEL, I.:

Voschlag für das Unterrichtthema "Sehfelder", Klasse 8 /Suggestion for instruction of the theme "Field of vision" in 8th form/

Biol. in der Sch., 34, 1985, No.11, pp. 419-420. 3 fig.

Problems of shortsightedness and longsightedness are taught only by means of the textbook. The author recommends a set of foils. Basic foil has pictures of three eyes - with a normal, with a too short and with a too long eye axis. The other foils demostrate fracture of rays by lens and the image of picture on the retina.

didactics of biology, biology instruction, means of instruction, transparency, biology, human biology, 8th class, basic school, GDR - 147311.

320. KELLY, P.:

Using transparencies as a Class Opener: Approaching the Right Hemisphere

The Amer. Biol. Teacher, 47, 1985, No. 5, pp.317-318.
3 fig.

The author describes coloured transparencies in biology instruction, especially in human biology instruction. He also offers directions to their production.

didactics of biology, biology instruction, means of instruction, transparency, USA - 147311.

321. POSTIGLIONEE, R. - SALUEMINI, J.:

Transparency Master - Cholesterol. Cholesterol's Pathway Through the Body's Cells.

The Amer. Biol. Teacher, 47, 1985, No. 3, p. 182. 1 fig.

The transparency works out cholesterol's pathway through human body and cell.

didactics of biology, biology instruction, means of instruction, cholesterol, USA - 147311.

322. SEEL, D.C.:

Presentable slides: a practical approach for amateur draftsmen

J. of Biol. Educ., 18, 1985, No. 2, pp. 147-150.Lit. 6, 2 fig.

The contribution presents tablets and diagrams for transparencies in instruction. There are directions how to draw, photograph and then in the form of tansparencies use in instruction.

didactics of biology, biology instruction, means of intruction, transparency, Great Britain - 147311.

10.7.4 Photographs, micro-photographs, macro-photographs, photo-herbarium

323. Das elektronenmikroskopische Bild der tierischen Zelle /Picture of animal cell from electron microscope/

Prax. der Naturwiss.-Biol., 34, 1985, No.4, pp. 1-10. Lit. 10, 16 photos, 6 worksheets, 2 models for foils.

Model for the theme Structure of animal cell is based on microphotographphs from electron microscope, which give more information on structure of animal cell than optical light microscope. Methods of work with electron microscope are described.

didactics of biology, biology instruction, means of instruction, microscope, micro-photograph, cell, FRG - 147311.

324. DIEUMEGARD, P.:

Photographier au microscope /Micro-photographs/

Biol. Geol., 72, 1985, No.4, pp. 765-769. 3 micro-photos, 1 fig.

The author describes micro-photographs of his own production, suitable for biology instruction. Micro-photograph is used in various ways, together with microscopic preparation .

didactics of biology, biology instruction, means of instruction, microscope, photograph, France - 147711.

325. KROPÁČEK, K.

Botanický fotoherbář. Krvavec toten /Botanical photo-herbarium. Sanguisorba officinalis/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No.19, pp. 18-19, 2 photos.

Preparation of Sanguisorba officinalis for photo-herbarium is described.

didactics of biology, biology instruction, means of instruction, photograph, Rosaceae, herbarium, Czechoslovakia - 147311.

326. WOLF, R. - KUFNER, M.:

Video-Mikroskopie und Mikro-Fotografie mit einfachen Mitteln /Video-microscopy and micro-photograph of simple means/

Prax. der Naturwiss.-Biol., 34, 1985, No. 4, pp. 34-41.

Universally used video-cameras are also used in schools, but they are often insufficiently technically set, the reason being the incorrect data. Microscopic pictures can be transmitted by them most favourably. The contribution informs about foundation of video-microscopy and micro-photograph.

didactics of biology, biology instruction, means of instruction, micro-photograph, FRG - 147311.

327. ONDOK, J.P.:

Fotografická technika "rybího oka" ve službě vědě /Phototechnique of "fish eye" in service to science/

Věda a Tech. mládeži, 39, 1985, No. 22, pp.26-27. 3 fig.

By technique of "fish eye" it is possible to photograph the whole hemisphere over horizon. Such photographs are called hemispheric. They are used for research of atmosphere and in ecology for studies of photosynthesis. By means of these photographs it is possible to find out - for example - the total surface of trees.

didactics of biology, biology instruction, photograph, physiology of plants, ecology, photosynthesis, Czechoslovakia - 147311.

328. WANNER, G.:

Viren, Bakterien un Algen im elektronen - mikroskopischen Bild /Viruses, bacteria, algae in the picture of electron microscope/

Prax. der Naturwiss.-Biol., 34, 1985, No. 4, pp.21-33. 6micro-photos, 6 worksheets.

Photos show 6 objects like T-H phage, Methanobacterium ruminantum, Staphylococus aureus, Chlorella spec. and Porphyridium cruentum in electron microscope. To each picture an explaining drawing is added.

didactics of biology, biology instruction, microscope, photograph, virus, bacteriophage, bacteria, alga, FRG - 147311.

10.7.5 Slides, film strips, projected microscopical specimen, diaphones

329. BARMAN, CH.R.:

Using Transparency Film to Produce 35 mm Slides

The Amer. Biol. Teacher, 47, 1985, No. 6, p. 370. Lit.1, 3 photos.

The author offers directions for production of slide drawings, inscriptions, photocopies from 35 mm transparency film.

didactics of biology, biology instruction, means of instruction, transparency, slide, USA - 147311.

330. PUGAL, N.A.:

Oznakomlenije školnikov s osnovami selsko-chozjajstvennogo proizvodstva s pomoščju dialfilmov /Acquainting pupils with fundamentals of agricultural production

by means of slides/
Biol. v Šk., 59, 1985, No. 1, pp. 38-40. 1 tab.

School reform demands improvement of labour education, it is therefore important to give pupils information on scientific basis of economy and on necessary professions. In 7th form pupils are taught two ways of agricultural production: breeding of domestic animals, breeding birds. For successful mastering it is suitable to use adequate slides.

didactics of biology, biology instruction, means of instruction, film strip, animal production, 7th class, secondary school of general education, USSR - 147311

331. ROZENŠTEJN, A. M.:
Statičnyje ekrannyje sredstva obučenija po biologii /1980- 1984 gg./ /Static projecting means for biology instruction - 1980 - 84/
Biol. v šk., 59, 1985, No. 1, pp. 45-50.

It is a survey of slides and filmstrips made between 1980 and 1984 for biology instruction. Materials are divided according to biological disciplines. To each aid a description is added, together with possibilities of use in given theme.

didactics of biology, biology instruction, means of instruction, film strip, slide, USSR - 147311.

10.7.6 Sketches, floral diagrams and formulaes, models for copying

332. KNOLL, J.:
Zur Veranschaulichung erdgeschichtlicher Zeiträume
/To demonstrate periods of Earth history/
Unterr. Biol., 9, 1985, No. 105, p. 54. 3 fig.

When palaeontology is taught, it is necessary to work with geologic periods. To imagine them is very difficult for pupils. The author brings several suggestions to make pupils' image exact.

didactics of biology, biology instruction, means of instruction, diagram, palaeontology, history + Earth, FRG - 147311.

10.8 Statistical tables, graphs, diagrams

333. BORGHT, B.C. van der - MATHOT, L.:
Graphiques et eneignement /Diagrams and school/
Biol. - Geol., 84, 1985, No. 2, pp. 265-280. 14 fig.

Biology teachers inform about possibilities of making the best use of diagrams in biology instruction. Diagrams fit in teaching physiology, ecology, marphology. Suitable examples are shown.

didactics of biology, biology instruction, means of instruction, diagram, textbook, graph, France - 147311.

334. **STRHÁRSKA, B.:**

Nástenka ako ilustrovaný kalendar prírody v 1. a 2. ročníku /School bulletin board as illustrated calendar in 1st and 2nd class/

Komenský, 109, 1984-1985, No. 2, pp. 105-108. 1 fig.

Primary instruction unites recent knowledge and experience of pupils, gives them order, enables their expression. For the teacher a great help is nature calendar. The author recommends pupils´ cooperation on the calendar. They can work on it in primary instruction and in other subjects, they draw, cut, collect nature objects, press them and apply on the board.

didactics of biology, biology instruction, primary education, calendar, nature, basic school, 1st - 2nd class, Czechoslovakia - 147311.

10.8.2 School bulletin boards, clippings from newspapers and periodicals, nature calendar

10.8.3 Textbooks, methodological handbooks

335. Ešče raz o novom izdanii školnogo učebnika "Botanika" /Once again about the recent edition of the textbook of botany/

Biol. v Šk., 22, 1985, No. 1, pp. 41-44.

Editors answer teachers´ question concerning botany textbook for 5th and 6th class of secondary school.

didactics of biology, biology instruction, means of instruction, textbook, botany, 5th-6th class, secondary school, USSR - 147311.

336. JUNGCK, J.R.:

A Problem Posing Approach to Biology Education

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 264-266.
Lit. 11.

Biology textbooks are mostly too scientific and need a better didactic approach to the problems, questions and tasks for pupils, improvement of the process of development of pupils´ thinking and the strategy of instruction. The author criticizes university textbook and suggests some improvements leading to higher activity of university studenty.

didactics of biology, biology instruction, means of instruction, textbook, university, USA - 147311

337. MLADÁ, J.:

O tvorbě knižních pomůcek vzdělávacího charakteru /On preparing books of educational character/

Přír. vědy ve Šk., 36, 1984-1985, No. 7, pp 245-247.

The author reports on preparation of a textbook in the seminar "Botany for young people". She evaluates textbooks and their use, as well as methodical handbooks for teachers. She introduces suitable literature for children and teachers of kindergartens. She also gives her opinion on keys for identifying and atlases or nature objects.

didactics of biology, biology instruction, means of instruction, literature for children and youth, atlas of nature objects, key for identifying, Czechoslovakia - 147311.

338. ROSENTHAL, D.B.:

Global Issues in High School Biology Textbooks

The Amer. Biol. Teacher, 47, 1985, No. 8, pp. 459-462.
Lit. 22, 2 tab.

The author discusses the problems of textbooks for American schools. He points to the present importance of biology and to its key problems in education of youth.

didactics of biology, biology instruction, means of instruction, textbook, secondary school, USA - 147311.

10.8.4 Teaching syllabi

339. JUNGBAZER, W.:

Grundlagen der Enzymkinetik. Ein Lehrprogramm für die Kollegstufe /Fundamentals of enzyme kinetic. Teaching programme for secondary grade II/

Prax. der Naturwiss.-Biol., 34,1985, No. 5, pp. 35-46.

Enzyme kinetic makes difficulties to students in secondary grade II. The discussed teaching programme deals with enzyme kinetic. It can also serve as a model for copying and transparencies. It enables activity of students and improves their ways of learning.

didactics of biology, biology instruction, means of instruction, programme, FRG - 147311.

10.8.5 Worksheets, workbooks, didactical tests, questionaires, didactical crossword puzzles, didactical games, etc.

340. BLACK, D.:

Cellular Thespians

The Amer. Biol. Teacher, 47, 1985, No. 3, pp. 163-168. Lit. 11, 1 fig.

Cytology is a basic conception of contemporary biology. It demands laboratory work and is very demanding on pupils. The author suggests a play with a role to enable pupils an understanding. The pupils prepare bulletin boards. The play has 4 acts. Act 1 - typical cell, Act 2 - plant cell versus animal cell, Act 3 - various ways of cell transport, Act 4 - cell diseases /diabetes/.

didactics of biology, biology instruction, cytology, cell, didactical play, USA - 147311.

341. EHRNSBERGER, R.:

Der Ökokasten /Ecology brick-box/

Unterr. Biol., 9, 1985, No. 108, pp. 44-45, 2 photos.

For ecology instruction the author suggests a brick-box for independent work of pupils. It is meant for solving ecologic problems. The brick-box is described and a didactic game suggested.

didactics of biology, biology instruction, ecology, didactic game, FRG - 147311.

342. ENGSTENBERG, CH.:

Rettet die Frösche /Save the frogs/

Unterr. Biol., 10, 1985, No. 111, pp. 48-51. 1 fig, 1 tab.

The article informs about a didactic game concerning nature conservation, namely protection of amphibians.

didactics of biology, biology instruction, didactic game, nature conservation, amphibians, FRG - 147311.

343. ETSCHENBERG, K.:

Sehen und Benennen /See and name/

Unterr. Biol., 9, No. 105, pp. 46-48. 5 fig., 1 fig.tab.

The author informs about the research of knowledge concerning birds, by means of a pre-test, test and post-test, and using worksheets.

didactics of biology, biology instruction, means of instruction, worksheet, test, research, FRG - 147311.

344. FLEER, D.:

Classroom Wildlife

The Amer. Biol. Teacher, 52, 1985, No. 9, p.

Information about an ecologic didactic play concerning problems of wild animals and factors influencing their life, food, chances to survive, diseases, social stress, severe winter, hunting by men, traps, birds of prey, old age, floods, etc.

didactics of biology, biology instruction, didactic play, ecology, USA - 147311.

345. FLIG, S.:

Ob ispolzovanii diktantov pri obučenii školnikov botanike i zoologii /On using dictates in botany and zoology instruction/
Biol. v Šk., 59, 1985, No. 1 , pp. 36-37.

The author describes dictates he uses in biology. Pupils write dictated phrases and fill missing notions.

didactics of biology, biology instruction, means of instruction, dictation, USSR - 147311.

346. KLEINE, G. - BERGMANN, M.:

Die Entstehung des Lebens - ein Evolutionsspiel für die Sekundarstufe II /Origin of life - a game with evolution on secondary grade II/
Prax. der Naturwiss. - Biol., 34, 1985, No. 3, pp.36-40. Lit. 6, 1 fig., 1 model for copying.

It is a didactical game with a cune, theme: Evolution and the origin of life. The article informs about regulations of the game, and information on the origin of life.

didactics of biology, biology instruction, means of instruction, didactic game, evolution, origin of life, FRG - 147311.

347. MEYER, G.:

Tiere sorgen für ihre Jungen /Animals look after their young/

Unterr. Biol., 9, 1985, No. 102, pp. 27-30. 25 photos, i fig., 4 worksheets.

Worksheets are for the ethology theme: Animals look after their young. Information on insect ethology, amphibians, fish and mammals.

didactics of biology, biology instruction, means of instruction, worksheet, ethology, FRG - 147311.

348. POKORNÝ, P.:

Pracovní list jako vhodná forma zapojení žáků při exkurzi v zoo /Worksheet as a suitable form of pupils joining in work during excursion in zoo/

Přír. vědy ve Šk., 36, 1984-1985, No. 5, pp. 167-169.4 fig.

The author describes possibility of using worksheets for excursion in zoo. Worksheets work out the theme Mammals. These sheets have been employed during an excursion in Prague Zoological Garden. Two variations are suggested.

didactics of biology, biology instruction, means of instruction, worksheet, excursion, zoological garden, Czechoslovakia - 147311.

10.8.6 Atlases, keys and punch cards to identify nature objects

349. GAŁECKA, B.:

Biedronki. Maly klucz do oznaczania /Lady-birds. A small key to identification/

Biol. w. Szk., 18, 1985, No.1, pp.20-34. Lit.2, 28 fig.

The author has prepared a small key to identification of frequent species of lady-birds. The key serves for work on the grounds and in biology classroom. Biology of lady-birds is described, their nutrition, environment. Their usefulness is stressed. The key items family and species.

didactics of biology, biology instruction, means of instruction, identification key, insect, Poland - 147311.

350. Invaze na zahrádce /Invasion in the garden/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 18, pp. 6-7. 9 photos.

Key to identification of White Cabbage Butterfly, photographs are added, as well as information on the characteristics of Pieridae and occurrence of individual species.

didactics of biology, biology instruction, means of instruction, identification key, insect, Czechoslovakia - 147311.

351. LOVELESS, A.R.:

Consider the Grasses

J. of Biol. Educ., 18, 1984, No. 2, pp. 156-160. Lit. 5, 6 fig.

Grasses are one of the most difficult plants to identify. Especially inflorescence is difficult. The author demonstrates morphology of ear and head and their modifications. Importance of grasses for man is stressed.

didactics of biology, biology instruction, identification key, grasses, USA - 147311.

10.8.7 Basic scientific literature, literature concerning didactics of biology

352. KÜHNLOVÁ, H.:

Nad úkoly časopisu po celostátní konferenci učitelů

/Over the assignments of the periodical after Teachers´ State Conference/

Přír. vědy ve Šk., 36,1984-1985, No. 7., pp. 242-243. Lit. 2.

In June 1984 a State wide Conference of Teachers took place, its aim being the evaluation of the level of Czechoslovak educational system in practice, and determination of courses of the development and topical needs of school practice. The periodical got its task: to help teachers of biology, chemistry, geography to fulfil the reform of education. Schools should have at least three current copies of the periodical.

didactics of biology, biology instruction, means of instruction, periodical, Czechoslovakia - 147311.

353. PAWELZIG, G.:

Die "Dialektit der Natur" von Friedrich Engels in der neuen Marx-Engels Gesamtaufgabe /Friedrich Engels´ Dialectics of Nature" in the recent Marx-Engels Collected Works publication/

Biol. in der Sch., 34, 1985, No. 10, pp. 353-359. Lit.8.

Engels´ "Dialectics of Nature" was first published in Moscow in 1925. It is now prepared for publication in a new edition of Marx and Engels. The author of the article pays attention to the chronology and system of ordering the texts.

didactics of biology, biology instruction, means of instruction, literature, dialectics, GDR - 147311.

354. THOMAS, R.:

Les livres de l´année 1984 en biologie-géologie-medicine - agronomie /1984 books on biology, geology, medicine and agronomy/

Biol. geol., 85, 1985, No. 1, pp. 155 - 207.

A list of books of the named scientific disciplines published in 1984. The list and the books are suitable for school teachers.

didactics of biology, biology instruction, literature, 1984, France - 147311.

10.8.8 Popular science literature and periodicals, school library

355. DICKERMAN, C.:

Library Instruction for the Biological Sciences

The Amer. Biol. Teacher, 47, 1985, no. 8, pp. 470-472.

1 photo.

University students come to libraries and with difficulty look for necessary information. Their lecturess send them to libraries, but do not prepare them for library work, and consequently students are not fond of work in libraries. The article informs students how to look for information in libraries.

didactics of biology, biology instruction, literature, library, work with text, USA - 147311.

10.8.9 Pupils' Notes

356. LOCK, R.:

Dicktaite and B. Damned - a comparison of three approaches of getting notes into pupil exercise books

J. of Biol. Educ., 19, 1985, no. 2, pp. 119-124. Lit.4, 5 tab.

The author [illegible] three possibilities of getting notes into pupil's exercise books: dictations, notes on blackboard and pupils' independently written notes during the lecture of the teacher. Research results: the greatest number of mistakes is in those exercise books, where pupils wrote notes as a dictation, the smallest number in those written independetly.

didactics of biology, biology instruction, means of instruction, exercise book, Great Britain - 147311.

357. TILLE, R.:
Bemerkungen zum Thema "Merk- und Übungshefte"/ Notes on the theme "Note books and exercise books"/
Biol. in der Sch., 34, 1985, No. 10, pp. 383-384.
Lit. 4.

The author speaks about the problems of pupils' exercise books. He stresses the importance of various forms of drawings and to notions building process. He thinks it is good to regularly evaluate pupils' exercise books as one of the bases for classification.

didactics of biology, biology instruction, means of instruction, exercise book, GDR - 147311.

10.9 Instruments and devices for biology instruction

358. JACKSON, J.A. - WALKER, J.R.L. - McWHA, J.A.:
The Use of Light-Emitting Diodes /LED/ as Green and

Red/Far-Red Light Sources in Plant Physiology

J. of Biol. Educ., 19, No.1, pp. 79-82. Lit. 4, 5 fig., 2 tab.

The author describes the use of diodes emitting green, red and far-red light. They are cheap, light /easily transportable/ and do not need coloured filters. The author describes their use in various experiments.

Didactics of biology, biology instruction, experiment light, physiology + plant, USA - 147311.

359. WOOD, S.:

Supplying Materials for Practical Biology

J. of Biol. Educ., 19, 1985, No. 1, pp. 22-23. 1 photo.

The firm Harris Biological offers their products and invites teachers and pupils to look at them. They are teaching aids enabling increase of pupils' activity during instruction. The firm supplies also laboratory equipment. In the catalogue /200 pages only for biology/ modern means of biology instruction are described.

didactics of biology, biology instruction, means of instruction, equipment, laboratory-equipment, excursion, Great Britain - 147311.

10.9.2 Instruments and aids for experiments with nature objects, kymograph

360. BUCK, M.:

A method of recording and predicting the pollen count

J. of Biol. Educ., 19, 1985, No. 2, pp. 107-110. Lit. 1, 6 fig., 1 tab.

The author presents an equipment enabling to find out the amount of pollen and to predict it on every-day basis. It is good for prevention of hay fever with allergic pupils; the teacher can make this equipment himself with the help of pupils.

didactics of biology, biology instruction, equipment, blossom, allergy, observation, Great Britain - 147311.

10.9.5 Instruments for creating images and reproducing sounds, film projectors, overhead projectors, tape recorders, radio sets, phonographs, radio-phonographs, combined projection facilities, control panels

361. BERAN, J. and coll.

Audiovizuální katedra AK 5 /Audio-visual table AK 5/

Učeb. pomůcky ve Šk. a Osv., 24, 1984-1985, No. 9, pp. 136-138. 4 photos.

An information on production of 4 audio-visual classroom tables for instruction of physics, chemistry, science, fundamentals of agricultural production, history and geography. The tables were made in the basic school of Výprachtice.

didactics of biology, biology instruction, audio-visual technique, basic school, Czechoslovakia - 147311.

362. JEMALA, P.:

Nový diaprojektor z NSR /New slide projector from FRG/ Učeb. pomůcky ve Šk. a Osv., 24, 1984, No. 1, pp.12-13. 4 photos.

Two new types of slide projector produced in FRG are described: FANTAX 600 A and FANTAX 600 M with halogen bulbs. The bulbs working time is 50 hours.

didactics of biology, biology instruction, meand of instruction, slide projector, FRG, Czechoslovakia - 147311.

10.9.7 Instruction rooms and aid storage rooms /biology workroom, biology laboratory, biology storage room/

363. HELLER, E.:

Zur Gestaltung und Nutzung des Fachunterrichtsraumes /To the equipment and use of an instruction room/ Biol. in der Sch., 34, 1985, No. 6, pp. 242-244. Lit. 1.

The author reports on his own experience with the equipment of biology instruction room.

didactics of biology, biology instruction, workroom, GDR - 147311.

364. TYLIKOVA, E.:

Iz opyta raboty po sozdaniju učebno-materialnoj bazy /Experience with the equipment of an instruction material basis/

Biol. v Šk., 59, 1985, No. 4, pp. 39-41.

The author equipped the biology storage room herself. Her pupils - a group of young ecologists - participated in the work. They also have a possibility to use a hot-house and a green-house.

didactics of biology, biology instruction, means of instruction, storage room, hot-house, green-house, USSR - 147311.

10.9.8 Micro-calculators, computers, micro-computers and teaching machines in biology instruction, information theory

365. Biopočítače - první kroky /Bio-calculators - first steps/
Věda a Tech. mládeži, 39, 1985, No. 22, p. 21. 2 fig.

A bio-calculator is described, possibilities of its use in science and technique. The information concerns the work of J. A. Ovčinkov, member of the Academy of Science of USSR.

didactics of biology, biology instruction, means of instruction, calculator, USSR - 147311.

366. BOJUNGA, W.:
"Einstieg" in die Ökologie über das MIT-Weltmodell
/Entry into ecology by means of MIT world model/
Prax. der Naturwiss.-Biol., 34, 1985, No.1, pp.2-8.

Lit. 3, 9 fig, 1 worksheet, 1 tab.

Ecology can be entered by means of a famous simulation through computer of Massachussetts Institute of Technology. It has been successfully used for ecologic research. The preparation of an ecologic model is described.

didactics of biology, biology instruction, ecology, computer, model, excursion, USA - 147311.

367. O´BRIERI, T.C.:

Computers in Education

The Amer. Biol. Teacher, 47, 1985, No. 5, pp.315-316.

The author describes the importance, assignment and advantages od computers for education. They have a double role: in programmed courses on the secondary level, and in students´ exercises. The author is critical, he also mentions some disadvantages.

didactics of biology, biology instruction, means of instruction, computer, USA - 147311.

368. BRYANT, E.H. and coll.:

Experiences of a BUG /Biology User´s Group/

The Amer. Biol. Teacher, 47, 1985, No. 1, pp. 29-33.
7 fig.

BUG, consisting of 5 biologists and 1 methematician, has been working at the University in West Illinois since 1981. The group introduces and prepares microcomputer programmes in agreement with biology teaching syllabi. The programmes are used in 1st year course in biology at the University, which has 10 000 students.

didactics of biology, biology instruction, means of instruction, computer, university, 1st year, USA - 147311.

369. DAY, M.J. - RANDERSON, P.F. - WOOD, A.J.:

Genmap - A microbial genetics computer simulation

J. of Biol. Educ., 19, 1985, No. 1, pp. 67-70. Lit. 4, 6 fig.

The authors have prepared a computer programme on microbial genetics. The programme has 3 parts: information, question, simulation.

didactics of biology, biology instruction, means of instruction, computer, micro-biology, genetics, bacteria, simulation, Great Britain - 147311.

370. McDERMOTT, J.:

Experience of an interactive program in undergraduate investigative practicals

J. of Biol. Educ., 19, 1985, No. 2, pp. 157-162. Lit. 2.

The described programme is used for undergraduates of 1st year University studies. They study for examination by help of the programme which includes a simulation of experiments with bacteria. These experiments cannot be performed in the lecture room, because they are dangerous and time demanding.

didactics of biology, biology instruction, micro-biology, computer, simulation, experiment, university, 1st year, USA - 147311

371. DIYARCHANOV, M.K.:

Sozdana kartoteka interesnych faktor /File of interesting facts/

Biol. v Šk., 59, 1985, No. 3, pp. 38-39.

The teacher of a village secondary school informs about his long time experience. He uses a file of interesting data of live nature, taught in individual biology disciplines in secondary schools. The file is based on materials from popular scientific magazines and literature.

didactics of biology, biology instruction, file, information theory, secondary school, USSR - 147311.

372. GATAULIN, A.M.

Kompjuter i kompjuternaja gramotnost /Computer and computer literacy/

Biol. v šk., 1985, No. 4, pp. 6-14.

The author heads the cybernetic department of Moscow agricultural academy. He describes the history of computers in USSR and computer literacy.

didactics of biology, biology instruction, computer, USSR - 147311.

373. GRAHAM, I.:
ENZVU - an enzyme kinetic computer simulation based upon a conceptual model of enzyme action.
J. of Biol. Educ., 19, 1985, No. 2, pp. 147-151.Lit. 11.

Computers bring simulation of enzyme kinetic, based upon the use of computer ability to create random numbers. By means of the computer, kinetic analysis of enzyme action with model enzyme is presented.

didactics of biology, biology instruction, computer, kinetic, kinetic analyser, enzyme, model, Great Britain - 147311.

374. JONES, R.T. - TOLMAN, B.:
Computer processing of BTEC assessment grades
J. of Biol. Educ., 19, 1985, No. 2, pp.116-117.

The authors come with a computer programme for BTEC assessment grades, for assessing results of independent pupil work, for calculations of average, etc.

didactics of biology, biology instruction, computer, statistic method, Great Britain - 147311.

375. JUNGCK, J. R.:
Margaret Oakley Daghoff, "harnessing the computer revolution"
The Amer. Biol. Teacher, 47, 1985, No. 1, pp. 9-10. Lit. 10.

The author demonstrates possible use of mathematics and computers in biology, medicine, macro-molecular biology, evolution. Computer is used for the evidence of sequences in biological realms, and also for evolution simulation.

didactics of biology, biology instruction, genetics, evolution, macro-molecule, proteins, USA - 147311.

376. JUNGCK, J.R. - CALLEY, J.N.:

Strategic simulation and Post-Socratic Pedagogy: Constituting Computer Softwear to Develop Long-term Inference through Experimental Inquiry

The Amer. Biol. Teacher, 47, 1985, No. 1, pp. 11-15. Lit. 6.

Today, computers are used for studies in genetic laboratories, for studies of macro-molecular biology and for assessing scientific experiments. They enable to repeat some historical biology experiments. A group of 12 students based an independent research on the use of computer strategic simulation. The authors point to the importance of computers in learning.

didactics of biology, biology instruction, computer, software, experiment, USA - 147311.

377. KOSCHWITZ, H.:

Der Mikrocomputer im Biologieunterricht /Micro-computer in biology instruction/

Der Math. und naturwiss. Unterr., 38, 1985, No. 8, pp. 487-501. Lit. 9, 13 fig.
The new means of instruction, computer, brings biology many possibilities to perform a number of experiments which could not be very well performed without the computer.

didactics of biology, biology instruction, computer, FRG - 147311.

378. KŘEČAN, Z.:

Interaktivní videosystémy ve výuce /Interactive video-systems in instruction/

Vesmír, 64, 1985, No. 9, pp. 491-493. 1 photo.

The author introduces video-taperecorders for reading TV programmes or for reading of TV camera. It is a part of video-technique which is still exceptional at our universities and in medicine. The question of using video-taperecorders in instruction is solved. The notion "teaching machine" is substituted by the notion "interactive system". Further, the author describes the function and future use of optical video-recordplayer and video-records.

didactics of biology, biology instruction, video-record-player, video-taperecorder, Czechoslovakia - 147311.

379. LEHMAN, J.D.:

Biology Education with Interactive Videodiscs/I/:

Flexibly Using Commercially Available Videodisc

The Amer. Biol. Teacher, 47, 1985, No. 1, pp. 34-37.
Lit. 12, 1 photo, 1 fig.

Production of electronics for the information theory and education has recently unusually spread. Interactive videodiscs have been developed and are used for education since 1950. Computer assisted learning /CAL/ is widely used in USA. Schools in USA have today 325 000 micro-computers, 85 per cent universities, 77 per cent secondary schools and 61 per cent basic schools are equiped with them. Contemporary videodiscs and the interactive videodisc technology represents the climax of communication technology.

didactics of biology, biology instruction, computer, videodisc, oinformation theory, USA - 147311.

380. LEONARD, W.H.:

Biology Education with Interactive Videodisc /II/: Development of Laboratory Simulations

The Amer. Biology Teacher, 47, 1985, No. 1, pp.38-40.
Lit. 3, 2 photos, 1 fig.

A scheme of connecting computers and videodisc instruction system is working, and individual parts of hardware are described. The article brings an example of using it in instruction /theme Climate and life/ and assesses the future of computer and videodisc technology.

didactics of biology, biology instruction, means of instruction, computer, simulation, USA - 147311.

381. PAICE, F.E.:

Evolve: A Computer Simulation for Teaching Labs on Evolution

The Amer. Biol. Teacher, 47, 1985, No. 1, pp. 16-24. Lit. 5, 13 fig.

The author describes the use of computer in school laboratory for teaching evolution problems. He describes the model plan of instruction and tge use of evolution factors procedures simulation. Two examples for laboratory exercise are added.

didactics of biology, biology instruction, evolution, computer, simulation, laboratory work, USA - 147311.

382. PRUEITT, M.L.:

Michelangelos of the Microchip

The Science Teacher, 52, 1985, No. 4, pp.20-23. 5 fig.

The author discusses the question whether artists, painters, can be substituted by computer. It is interesting that computer can be used also in artistic work creation. The quality of artistic pictures made by computers rises. Of course, man remains the creator of computers and their programmes.

didactics of biology, biology instruction, computer, art, painting, simulation, USA - 147311.

383. RAMDALL, J.E.:

Microcomputers and Biomedical Education

The Amer. Biol. Teacher, 47, No. 3, pp. 176-178.

The question of possible use of microcomputers in biomedicine is solved. The pre-clinical education of physicians simulation of some methods of operations and simulation of physiologic and biologic factors is used.

didactics of biology, biology instruction, medicine, university, computer, simulation, USA - 147311.

384. SPAIN, J.D.:

Classroom Strategies For Using Microcomputers Courseware

The Amer. Biol. Teacher, 47, 1985, No. 2, pp. 120-122. Lit. 4.

Computer is not an automatic teaching machine. It needs good teaching programmes. It cannot therefore substitute the teacher. Preparation of programmes is described - there are not enough of them in schools. Programmes can be prepared only on the basis of teacher´s knowledge and pupil´s abilities. The author describes various means of computer in instruction.

didactics of biology, biology instruction, computer, programme, USA - 147311.

385. SPAIN, J.D.:

Fitting Equations to Experimental Data

The Amer. Biol. Teacher, 47, 1985, No. 7, pp.437-438.
Lit. 4.

Suitable maths equations for experimental data to fit computer programmes and work with data in computers are demonstrated.

didactics of biology, biology instruction, computer, interdisciplinary relations, mathematics, data, USA - 147311.

386. SPAIN, J.D.:

PILOT - A Biologist's view of an authoring language

The Amer. Biol. Teacher, 47, 1985, No. 8, pp. 493-495.

Problems of computer language is discussed. In USA BASIC - microcomputer programme language and other languages like EN Basic, PILOT, TENCORE are used. Further, there are PILOT I, PILOT Super. The author compares advantages of individual languages for microcomputer programmes and compares BASIC with PILOT.

didactics of biology, biology instruction, computer, programme, coding + language, USA - 147311.

387. SPAIN, J.D.:

The Summit Courseware Development Project

The Amer. Biol. Teacner, 47, 1985, No. 1, pp. 25-28.

In 1980, the National Science Foundation recommended two and a half year project to develop 20 biology and ecology programmes for microcomputers in BASIC. Project was finished and programmes verified. Results of the new programme research are added.

didactics of biology, biology instruction, programme, coding + language, research, USA - 147311.

388. SWEET, H. C.:

The Use of Clustering Techniques by Students on an Apple Computer

The Amer. Biol. Teacher, 47, 1985, No. 1, pp. 41-47. Lit. 7, 2 fig., 2 tab.

In their programmes, computers may also use graphs and diagrams. The author has developed a programme in BASIC, which is used for clustering ecology, biogeography, systematics, phylogenesis, morphology, physiology and other data. It is used for determination of unknown organisms.

didactics of biology, biology instruction, coding + language, USA - 147311.

389. TJUTJULKOV, N.:

Personalnijat kompjuer /Personal computer/

Biol. i Chim., 28, 1985, No. 1, pp. 2-8. 2 fig.

The author informs on microelectronic revolution, on development of computers and their possibilities in biology instruction. He introduces some examples.

didactics of biology, biology instruction, computer, means of instruction, Bulgaria - 147311.

390. **WANGENHEIM, K. von:**

Wird die Menschheit das Überleben lernen? /Will mankind learn how to survive?/

Prax. der Naturwiss. - Biol., 34, 1985, No. 1, pp. 22-41. Lit. 10, 8 fig., 3 worksheets, 2 tab.

The Earth representsa closed system. Mankind must learn how to live in the nature of the Earth in balance. However, society of industrial countries is getting in conflict with natural balance. The author introduces a computer didactical play, solving possibilities of man´s survival as far as environmental pollution, cancer, drug addiction is concerned. Pupils find this play very interesting.

didactics of biology, biology instruction, computer, didactical play, cybernetics, FRG - 147311.

11 Organisational forms in biology instruction

11.2.1 Laboratory work

391. **ALEXANDER, J.E. - ANDERSIRK, T.E. - ANDERSIRK, G.J.:**

Classical Conditioning in the Pond Snail Lymnaea stagnalis

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 225-228. 2 fig., 1 tab.

Classical I. P. Pavlov experiment can be performed in laboratory work with Pond Snail /Lymnaea stagnalis L./. After training it reacts to chemical irritation as to nutrition. The experiment is planned into 5 days. Hunger influences training. The experiment undergoes statistical analysis. Chemical irritation in this experiment substitutes light irritation or sound of bell in famous Pavlov experiment with dogs.

didactics of biology, biology instruction, laboratory work, experiment, conditioned reflex, moluscs, USA - 147311.

392. BERG,D.:

Hand Sectioning: A Useful Laboratory Technique

The Amer. Biol. Teacher, 47, 1985, No. 7, p. 427. Lit 1, 3 fig.

Hand sectioning for microscopic observations of fungus Cytospora, of class Denteromycetes, is described. Cytospora grows on willows both in cities and in the country.

didactics of biology, biology instruction, laboratory work, microscope, preparation, fungi, USA - 147311.

393. COLLINS, K. - COLLINS, B.:

Daphnia. A Handy [illegible] for the Classroom Teacher

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 299-300. Lit. 9, 1 fig., 1 tab.

Syllabi for basic and secondary schools demand dissection of a crayfish and a grasshopper. The author prefers Daphnia, which can be obtained during the whole year in sufficient amount and which is suitable for many interesting experiments. Daphnia responds to chemical irritation from the environement to higher oxygen concentration, in well aerated water is colourless, in stagnant water coloures red by haemoglobin, it reacts to temperature changes, is a suitable object for morphological observations, etc.

didactics of biology, biology instruction, zoology, arthropods, USA - 147317.

394. DRABEK, CH. M.:

Anatomical Preparations for Demonstrating Vertebrate Adaptations

The Amer. Biol. Teacher, 47, 1985, No. 8, pp.483-484. Lit. 4, 4 fig.

The author uses vertebrate and parts of their bodies. His source of material are frozen, overrun on highways, shot vertebrates, and material from veterinary surgeons. The method of preparation is described together with preparation means, dry preparation, wet preparation and dissection to obtain individual organs.

didactics of biology, biology instruction, vertebrates, dissection, preparations, USA - 147317.

395. MYERS, R.:

A Method for Isolating DNA from Escherichia Coli

The Amer. Biol. Teacher, 47, 1985, No. 6, pp. 362-364.
Lit. 2, 1 photo, 1 tab.

The author describes a method for isolation DNA from Escherichia Coli in laboratory. From the culture of this bacterium cells of bacteria are obtained /by centrifuge/ and by means of special chemicals . The process can be performed in 2 separate periods of laboratory work.

didactics pf biology, biology instruction, microbiology, nucleal acid, laboratory work, bacteria, USA - 147317.

396. NICOTRI, B.:

Attend a Summer Workshop of the Association for Biology Laboratory Education

The Amer. Biol. Teacher, 47, 1985, No. 5, pp. 303-304.

ABLE /Association for Biology Laboratory Education/ is a new organization, founded 1979 at the University of Calgary. Today it has 500 members from USA and Canada, among them schools and universities. Last conference was held at the University in Las Vegas. On the conference programme/there were didactical problems of laboratory work, experiments witn model organisms, laboratory technique for secondary and high schools.

didactics of biology, biology instruction, scientific organization, laboratory work, high school, university, secondary school, USA - 147317.

397. SHARP, W.H. - DOLMAN, T.M.:

The Use of Allelopathii Interactions as a Laboratory Exercise

The Amer. Biol. Teacher, 47, 1985, No. 2., pp.105-106.
Lit. 7, 1 fig.

Allelopathy is limitation of growth of one organism through the influence of chemical products of another organisms. The author uses functions of allelopathy in laboratory work, for example to prove influence of the extract of Symphoricarpos occidentalis on Agropyron cristatum L. Gaertn.

didactics of biology, biology instruction, physiology + plant, laboratory work, USA - 147317.

398. STENGEL, J.:

Let's Make Laboratory Practicals ... Practical

The Amer. Biol. Teacher, 47, 1985, No. 8, pp. 485-486.
2 photos.

Teaching machines and computers are very demanding on time, especially for the teacher. For laboratory work the author recommends brickboxes, cards, markers, files. Cards have questions for pupils and pupils choose questions and theme for their work.

didactics of biology, biology instruction, laboratory work, file, question, pupil, USA - 147317.

399. THOMSON, R. G.:

Semi-Quantitative Measurement of Blood Glucos Levels.
An Undergraduate Laboratory Study.
The Amer. Biol. Teacher, 47,1985, No. 3, pp. 159-162.
Lit. 11, 7 fig.

Glucose toleration test for laboratory exercises of undergraduates is described. Experiments with blood glucose level lead students to understand hormone regulation of metabolic phenomena. The length of data collection is longer in these experiments, but results are good.

didactics of biology, biology instruction, physiology + man, laboratory work, blood, glucose, experiment, hormone regulation, USA - 147317.

400. WENTWORTH-PERRY, D.:

Lung volumes and the effect of exercise
The Aust. Sci. Teachers J., 31, 1985, No. 1, pp.55-62.
1 tab.

The author gives directions to laboratory work with measuring the volume of lungs. He uses a simple equipment /teacher and pupils set it together themselves/ and shows, what is possible to be measured - vital capacity of lungs, expiration reserve volume, inspiration reserve volume, comparison of smokers lungs volume and non-smokers lung volume, comparison of lung volume of training sportsmen with lung volume of other people, men and women, etc.

didactics of biology, biology instruction, human biology, respiration system, volume, laboratory work, Australia - 147317.

11.2.2 Practical exercises in biology, in ecology

401. JURČÁK, J.:

Tulipán v praktickém cvičení z biologie /Tulip in practical exercise in biology/

Přír. vedy ve šk., 36, 1984-1985, No. 1, pp. 5-9. Lit.20, 23 photos.

Ideas for practical exercise - observing the inner structure of vegetative and generative organs of tulip - for secondary schools of general education /gymnasium/.

didactics of biology, biology instruction, practical exercise, Angiospermae, anatomy, Czechoslovakia - 147317.

402. NIEMIERKO, M.:

Ćwiczenia z fizjologii roślin / Exercises from plant physiology/

Biol. w Szk., 38, 1985, No. 3, pp. 166-170. Lit. 6.

Teaching syllabi for 3rd class of Polish secondery schools assign for plant and animal physiology 58 periods, from which 23 periods are for practical exercises from physiology of plants. Here some exercises, for example phototropism as the expression of irritability of plants, are described.

didactics of biology, biology instruction, physiology of plants, practical exercise, motion + plant, experiment, Poland - 147317.

403. SCADDING, S.R.:

Classroom Study of the Control of Mitosis in Planaria

The Amer. Biol. Teacner, 47, 1985, No. 7, pp. 428-429.

Lit. 4.

The article suggests practical exercises with mitosis. Factors initiating plant and animal mitosis are followed. They are biochemical factors controlling cellular cycle. Experiments with Planaria and observations of mitosis in Planaria are described.

didactics of biology, biology instruction, mitosis, USA - 147317.

11.2.3 Hobby clubs

404. DUNDA, K.:

Mimoškolní vychova a vzdělávání /Out-of-school education/

Přír. vědy ve Šk., 36, 1984-1985, No. 7, pp. 247-257.

The author presents a survey of natural science in children's and youth's hoboy clubs organized by Pioneer and Socialist Union of Youth organizations and in National Front group of interest and other educational and cultural organizations. The article discusses present situation, good results and also problems, of botanical interest groups, biology olympiades, etc.

didactics of biology, biology instruction, hobby club, botany, Czechoslovakia - 147317.

11.2.4 Biology discussions

405. BAJANKINA, Z.V.:

Iz opyta ispolzovanija seminarskich i lekcionnych zanjatij pri obučenii staršeklassnikov /Experiences with tasks given in seminars and instruction periods in higher classes/

Biol. v Šk., 59, 1965, No. 6, pp. 21-24. 1 tab.

The author has good experience with discussions and general biology seminars of older pupils. When pupils have questions during explaining new themes, the author introduces a discussion. Questions are answered as soon as a problem situation arises, hypotheses are expressed and are either verified or dismissed. In this way the author proceeds in the theme Photosynthesis, structure of chloroplasts, cosmical significance of plants, etc.

didactics of biology, biology instruction, problem instruction, discussion, seminar, secondary school, USSR - 147317.

406. GANČEVA, G.:

Izučavaneto na žiznenata sreda v krážoka po biologija /Teaching about environment in biology hobby club/
Biol. i Chi., 28, 1985, No. 4, pp. 44-46. 1 tab.

The club studies the environment of the classroom, microflora. The members of the club prepare Petri dishes with agar, and leave them uncovered in the classroom for 48 hours at 37 degrees Centigrade. After this time they count the number of bacteria colonies, their colour, shape and size. The number of bacteria in the classroom in $1m^3$ is stated after Panteleev Demjanov and coll.

didactics of biology, biology instruction, hobby club, microbiology, bacteria, experiment, cultivation + micro-organism, workroom, Bulgaria - 146317.

407. GRUBY, M.:

Koło młodych przyrodników /Group of young scientists/
Biol. w Szk., 38, 1985, No. 2, pp. 73-82, 3 tab.

Biology hoboy club in Krapkonice was founded in 1966. It is described how to work, list of pupils´ work is instroduced, The club has a botanical, zoological, library and collecting sections, and publishes a magazine.

didactics of biology, biology instruction, hobby club, working plan, Poland - 147317.

408. GUREVIČ, A.A.:

O rabote školnogo algologiskogo kružka /About the work of an algological group/

Biol. v Šk., 59, 1985, No. 4, pp. 65-68, Lit. 3, 2 tabl.

In one of the Leningrad schools an algological hobby club was founded. Its aim is to improve pupils' knowledge of algae, of their structure and their assimilation to water. The phases of the group's work and experiments are described.

didactics of biology, biology instruction, hobby club, algae, experiment, identification key, USSR - 147317.

409. KLAWITTER, E.:

Hospitiert und kommentiert. Zur Arbeit in den fakultativen Kursen /Visits in the classroom and comments on them/

Biol. in der Sch., 34, 1985, No. 5, pp. 198-200.

The author visited 22 instruction periods. She summarizes: the teachers worked with enthusiasm, the periods were well prepared, and lot of material was at hand. During instructio experimenting and observing prevailed. As far as shortcomings are concerned, sometimes it was insufficient respecting of didactical aspect, of developing creativity, separating theory and practice, etc.

didactics of biology, biology instruction, hobby club, visiting classes, GDR - 147317.

410. MERKULOV, B.A.:

Belyje golubi k festivalju /White pigeons for the festival/
Biol. v Šk., 59, 1985, No. 3, pp. 39-41. 1 photo.

To the opening of XVI. festival of world youth and students, 2 000 pigeons will fly up - the symbol of peace. These pigeons have been bred by the members of Moscow group of breeders. 30 pigeons are trained in 199th secondary school in Moscow, where pigeons are used in school instruction of zoology and genetics.

didactics of biology, biology instruction, hobby club, breeder, birds, animal production, USSR - 147317.

411. MAKARA, S.:

Projekt lekcji wychowawczej przy wspołpracy z kołem biologycznym /Project of educational lesson in cooperation with the biology interest group/
Biol. w Szk., 38, 1985, No. 2, pp. 97-99. 8 fig.

The most active pupils of the biological interest group help their teacher in educational work. Together with their teacher they worked out the theme Man and nature - friends, or enemies?

didactics of biology, biology instruction, hobby club, ecology, test, Poland - 147317.

412. MŁODKOWSKA, Z.:

Moje kolo biologyczne /My biology club/
Biol. w Szk., 38, 1985, No. 2, pp. 92-97.

The author describes the biology hobby club in one of Warsaw basic schools. She includes the one-year programme of this club´s work and the results.

didactics of biology, biology instruction, organizational form, hobby club, planning instruction, Poland - 147317.

413. NĚMČENKO, J.F. - GORNOSTAJEVA, L.S.:
Organizacija raboty kružka junych naturalistov v škole /Work organization in the club of young scientists/
Biol. v Šk., 59, 1985, No. 3, pp. 54-57. 1 tab.

The article contains recommendation for the work of young people in clubs. Accepting members, planning activity, confrontation with syllabi - these are the main points of one part of it. The author suggests activity according to the age of pupils and preparing a thematical plan. Methods and notes of the club´s work are described in the last part of the article.

didactics of biology, biology instruction, forms of organization, hobby club, planning instruction, USSR - 147317.

414. PŁOTKOWIAK, S.:
Moja praca z kolem biologisznym /My work in biology hobby club/
Biol. w. Szk., 38, 1985, No. 2, pp. 83-87. 2 tab., 1 crossword puzzle.

Work in biology hobby club on a basic school is described. Conditions of work at the school are mentioned. The club works in an area damaged by industry.

didactics of biology, biology instruction, form of organization, hobby club, planning instruction, Poland - 147317.

415. SIWEK, A.:
Jak provadzę kolo biologiczne /How I manage a biology hobby club/
Biol w. Szk., 38, 1985, No. 2, pp. 87-93. Lit. 15, 1 tab.

The author works with pupils in a school for children with sight defects. It is very suitable to connect these pupils with life in nature. She informs on the programme of the hobby club for the whole year. The activity is directed also to walks, exhibitions, herb collecting. Attention is paid to trees.

didactics of biology, biology instruction, forms of organization, hobby club, sight defects, special school + sight defect, Poland - 147317.

416. SOBIERAJ, W.:
Program wycieczek w kole biologicznym /Programme of excursions in biology hobby club/
Biol. w. Szk., 38, 1985, No. 2, pp. 99-101. 1 tab.

Introduction of the plan of excursions of a biology hobby club in basic school in Radom. They study the grounds, are in contact with nature, and are prepared for deeper study of botany and zoology.

didactics of biology, biology instruction, forms of organization, hobby club, excursion, Poland - 147317.

417. VETROVA, V.I.:

O rabote našego kružka junych cvetovodov /On the work of young florists hobby club/

Biol. v Šk., 59, No. 4, pp. 68-70.

Work of young flower growers of a secondary school in polar region /Murmansk/ is described. They have greenhouses for their use. They love the work, are responsible and have a very good relation to nature.

didactics of biology, biology instruction, forms of organization, hobby club, greenhouse, polar region, USSR - 147317.

11.2.4 Biology discussion

418. RUBALEVA, L.J.:

K provedeniju Dnja znanij /To the Day of Science/

Biol. v Šk., 59, 1985, No.4, pp. 29-31.

The Day of Science is on 1st September. It is a State festival of book propagation, of science and knowledge about nature, society and man. School children visit museums, zoological gardens, science institutions, they meen scientists, agricultural experts, etc. The author suggests suitable discussions for this day for 5th - 10th forms.

didactics of biology, biology instruction, forms of organization, discussion, USSR - 147317.

419. TRAFIMOVA, G.V.:

Cvety i porech /Literaturno-muzykalnaja kompozicija/ /Flowers and powder. Literary musical essay/
Biol. v Šk., 59, 1985, No. 2, pp. 71-76. Lit. 23.

Soviet schools prepare for 9th May the Day of victory over fascism. The author suggests a programme for the festival, called "Flowers and powder" - she has prepared it with her pupils. The literary part of it has a symbolic character. Extracts from poems represent their attitude to life which, together with flowers, form a contrast to death bringing war.

didactics of biology, biology instruction, discussion, Great Patriotic War, anniversary, USSR - 147317.

11.3.1 Excursion, hiking camps, field work, outdoor school

420. BAUER, E.W.:

Ein Besuch im Museum Hauff /Visit to Hauff Museum/
Unterr. Biol., 9, 1985, No. 105, pp. 21-23.

It is a recommendation of an excursion to the museum in Hauff - with a large collection of fossils. The author describes the excursion and informs on some items of the exposition. As an addition to the article J. Knoll has prepared worksheets for pupils to occurrence and way of life of extinct animals.

didactics of biology, biology instruction, forms of organization, excursion, museum, palaeozoology, worksheet, FRG - 147317.

421. GRIMM, H.:

Tiere im Moorgewässer /Animals in turf waters/
Unterr. Biol., 9, 1985, pp. 39-42. Lit. 15, 2 information sheets, 1 fig., 1 tab.

The author describes excursion to turf area to study animals in the acid waters. The excursion is meant for secondary grade II , for 12th and 13th form. Turf waters are extremely poor in animal species and so it is easy to identify animals. Pupils investigate these localities ecologically, their fauna and abiotic factors. Animals occurring in these places are named. Results of the excursion form the content of 3 instruction periods.

didactics of biology, biology instruction, forms of organization, excursion, turf, zoology, ecology, FRG - 147317.

422. JENSEN, E.G.:

Erfahrungen und Vorschläge zur Vorbereitung, Durchführung und Auswertung der biologisch-geographischen Exkursionen /Klasse 9/ /Experiences and suggestions for preparation, performance and assessment of a biologic-geographical excursion in 9th form/

Biol in der Sch., 34, No. 2/3, pp. 60-67. Lit. 6.

The aim of the contribution is to inform about the experience with organization of a biologic- geographical excursion of 9th form. The author directs his attention mainly to the application of theoretical knowledge and to the region principal. He then analyses individual parts of the excursion.

didactics of biology, biology instruction, forms of organization, excursion, biology, geography, 9th class, GDR - 147317.

423. KLAHM, G.:

Pflanzen und Tiere des Karbons /Flora and fauna of the carbon/

Unterr. Biol., 9, 1985, No. 105, pp. 25-36. Lit. 7, 1 information sheet, 4 fig.

Suggestion for an excursion of secondary grade I into the geographical museum of Saaren mines. From carbon era there are today four large coal districts. On the dumps fossils of plants and of some animals can be found. The author also suggests excursion into the mines. After the excursion, pupils arrange a small exhibition of fossils.

didactics of biology, biology instruction, forms of organization, excursion, palaeontology, FRG - 147317.

424. KOLL, J.:

Paläontologie /Palaeontology/

Unterr. Biol., 9, 1985, No. 105, pp. 4 - 14. Lit.47, 15 fig.

Palaeontology and geology try to reconstruct plant and animal life and environment in past geologic eras. Palaeontological problems are explained by the author on the example of a mining pit near Hannover.
He explains relations between palaeontology and other scientific branches, points to positive results of palaeontology, yet also to some errors.

didactics of biology, biology instruction, forms of organization, excursion, palaeontology, fossil, FRG - 147317.

425. MANKE-KAMER, K.:

Grundschüler entdecken die Welt der Saurier /Basic school pupils discover the world of reptiles/

Unterr. Biol., 9, 1985, No. 105, pp. 15-20. Lit. 10, 3 fig., 4 worksheets.

It is a description of an excursion into a natural history museum in Hannover. Pupils like dinosaurs and other Mesozoic reptiles. They have worksheets with tasks and pictures, some tasks for modelling. They solve basic questions about when the fossil reptiles lived, how they lived, how they reproducted, etc.

didactics of biology, biology instruction, forms of organization, worksheet, excursion, museum, palaeontology, reptiles, FRG - 147317.

426. MATZKE, M.:
Festigung und Erweiterung von Artenkenntnissen auf Sommerexkursionen und Wanderungen /Fixing and widening of the knowledge of species during summer excursions and tourism/
Biol. in der Sc ., 34, 1985, No.6, pp. 245-247. 3 tab.

Walks and excursions organized for children when they are in summer camps, are a suitable opportunity to fix and widen their knowledge of plants and animals. The author analyses what species the children may learn to know.

didactics of biology, biology instruction, forms of organization, excursions, identification key, GDR - 147317.

427. PELLETIER, M.C. - VANDROUX, M.R.:
Un outil pédagogique nouveau: Le banque de données, un example avec l´ecosystéme pélagique du Lac Léman /A new pedagogical aid - bank of data. Example of pelagic ecosystem of Lake Léman/

Biol. Geol., 85, 1985, No. 1, pp. 75-91.

Studies of pelagic ecosystem of Lake Léman are described, data, their documentation and graphic notes.

didactics of biology, biology instruction, excursion, works on the grounds, ecology, ecosystem, lake pelagic, France - 147317.

428. PUGAČEVA, T.A.:

Komplekenaja zimnaja ekskursija v gorodskoj skver /A complex winter excursion into a city park/

Biol. v Šk., 59, 1985, No. 6, pp. 24-26.

The author describes excursion of a basic school 5th class into a city park. The pupils meet basic forms of plants, many species, assimilation of plants to the conditions of winter season. On special cards tasks are given to groups of pupils.

didactics of biology, biology instruction, forms of organization, excursion, park, USSR - 147317.

429. SCHMIDT, L.:

Biologische Exkursionen in den Klassen 5 und 6 unter besondered Berücksichtigung der Vorleistungen des Heimatskundeunterrichts /Biology excursion of 5th and 6th class with the aspect of using the knowledge of homeland study/

Biol. in der Sch., 34, 1985, No. 6, pp. 235-237. Lit.1.

From homeland study the pupils know a careful observation, separating fundamentals, comparing objects, finding out relations. All this is possible to be performed during excursions. The author introduces possible themes for botanical and zoological garden visits, and formulates criteria which influence their successful progress.

didactics of biology, biology instruction, forms of organization, excursion, basic school, 5th - 6th class, homeland study, GDR - 147317.

430. ŠTEFL, V.:

Připravujeme školu v přírodě /Preparations for out-door school/

Komenský, 109, 1984 - 1985, No. 6, pp. 366-368.

Out-door school is a part of the whole educational system in Czechoslovakia. The article informs about teachers' work in out-door school: preparations, co-operation with suitable persons, programme, homeland and natural science work at school and in nature, and preparation of the teacher himself.

didactics of biology, biology instruction, forms of organization, out-door school, planning instruction, Czechoslovakia - 147317.

431. ŠUBLINA, L.S.:

Metodičeskije rekomendacii k provedeniju ekskursie na temu "Raznoobrazije cvetkovych roslin". VI. klas / Methodical recommendations to excursion "Variety of angiosperms" - for 6th class/

Biol. v Šk., 59, 1985, No. 4, pp. 33-39. 3 tab.

Description of an excursion to recognize variety of angiosperms and their assimilation to local conditions of nature in the middle of September. Before the excursion, it is necessary to speak about morphology of Angiospermae and about the principles of description and identification of plants. Because in September there still are many flowers in blossom, this excursion is successful and brings a lot of plant material for further work in the classroom.

didactics of biology, biology instruction, forms of organization, excursion, botany, identification key, USSR - 147317.

432. VLČEK, K.:

Efekt pobytu dětí ve školách v přírodě /The effect of children's stay in out-door schools/

Komenský, 109, 1984-1985, No. 7, pp. 432-434.

Out-door school helps improve the physical state of pupils of cities, towns and industrial areas. The author informs about research of 8-9 year old children in 36 classes in out-door school. The research was concerned with frequency of various forms of instruction organization, excursions, recognizing nature objects, and with the structure of the day.

didactics of biology, biology instruction, forms of organization, excursion, out-door school, research, Czechoslovakia - 147317.

433. **WHITFIELD, L.:**

City Farms for the Urban Teacher

J. of Biol. Educ., 18, 1985, No. 2, pp. 105-106. 1 photo.

Today there are 35 city farms and public school gardens in Great Britain. Further 15 of them are planned. Each of them has special workers and volunteers to organize pupils' excursions and perform with them practical work.

didactics of biology, biology instruction, form of organization, excursion, park, Great Britain - 147317.

434. Zadači letnej trudovoj /Tasks of summer working activity/

Biol. v Šk., 59, 1985, No. 3, pp. 3-6.

The editorial suggests tasks for an active participation of school children in farmwork, in public services and in enterprises, where they get an image of socialist production and economics , as well as ideas about their future profession.

didactics of biology, biology instruction, form of organization, holidays, labour education, USSR - 147317.

435. Zadanija učastnikam pjatogo etapa Vsesojuznoj turistsko-krajevedčeskoj expedicii pionerov i školnikov "Moja rodina - SSSR" /1984-1986 gg/ /Tasks for participants of 5th phase of the tourist expedition of pioneers and pupils "My country - USSR" - 1984-1986/
Biol. v Šk., 59, 1985, No. 3, pp. 67-70.

The fifth phase is devoted to 40th anniversary of the victory of Soviet people in the Great Patriotic War. The editors recommend certain tasks. Recommended are also organizations willing to offer methodical and other sort of help. The tasks are directed towards nature conservation.

didactics of biology, biology instruction, forms of organization, work in the fields, Great Patriotic War, anniversary, holiday, USSR - 147317.

436. ZÄNKER, CH. - ZÄNKER, W.:
Erfahrungen bei der Durchführung von Exkursionen in den Klassen 5 und 6 /Experience with excursion performance in 5th and 6th forms/
Biol. in der Sch., 34, 1985, No. 6, pp. 238-239.

5th and 6th forms have to perform at least 5 excursions. Regional principle is very important, as well as application of theoretical knowledge. Examples of excursions are added.

didactics of biology, biology instruction, forms of organization, excursion, moluscs, basic school, 5th - 6th classes, GDR - 147317.

11.3.2 Socially beneficial work, pupils´ voluntary work

437. DERVIZ-SOKOLOVA,- T.G.-KUZENKOVA, M.JA.:

Školnyj rekreacionnyj patrul /School recreational guard/ Biol. v Šk., 59, No. 1, pp. 71-76. Lit. 5, 3 tab.

School recreational guards are a new form of pupils´ work for protection of nature. They look after localities of holidaying, in which some citizens help them. They watch the places, analyze plants, mark touristic trails and propagate nature conservation. Educational significance lies in the forming of necessary habits and in widening of ecologic education.

didactics of biology, biology instruction, voluntary work, nature conservation, labour education, holidays, work on the grounds, USSR - 147317.

438. KOBERNIK, A.N.:

Vmeste s bazovym chozjajstvom rastim živctovodov /Together with basic husbandry we educate animal breeders/ Biol. v Šk., 59, No. 3, 1985, pp. 63-63.

The author informs about his experience of Andrejevsk secondary school which cooperates with the farm "Kollektivist" in basic husbandry. The pupils work in specialized groups of animal production. The teachers have a precisely prepared plan of activities for individual groups. This activities are planned also for summare holidays. The work has a positive effect on professional orientation of pupils.

didactics of biology, biology instruction, forms of organization, voluntary work, secondary school, animal production, labour education, USSR - 147317.

439. Položenije ob učeničeskoj proizvodstvennoj brigade v kolchoze, sovchoze /Decree on pupils´ production voluntary work in kolchoz and sovchoz farms/
Biol. v Šk., 59, 1985, No. 5, pp. 63-65.

On May 12th, 1984 the Ministry of education of USSR issued a decree concerning labour education of pupils and their professional orientation. To this document an addition was issued, on improvement of production voluntary work in kolchoz and sovchoz farms. Pupils´ voluntary work applies for 8th-11th classes. The addition expresses the content and organization of pupils´ voluntary work and duties of schools and economic organizations.

didactics of biology, biology instruction, voluntary work, labour education, professional education, agricultural production, 8th-12th classes, secondary school, USSR - 147317.

440. SAPAROV, S.M.:

Iz opyta raboty učeničeskich proizvodstvennych brigad Turkmenii /Experience of the pupils´ voluntary production work in Turkmenia/

Biol. v Šk., 59, 1985, No. 4, pp. 53-55.

The described voluntary workers from schools are directed towards the growing of cotton-shrubs which are the basis of affluance of Turkmenian economy. The results of pupils´ work are analyzed and new tasks for next year prepared.

didactics of biology, biology instruction, voluntary work, agricultural production, Turkmenian SSR, USSR - 147317.

441. SCHARRER, K.:

Altaluminium - Sammelaktion /Old aluminium - a collection for national economy/

Prax. der Naturwiss. - Biol., 34, 1985, No. 4, pp. 46-47. 1 model foil.

In May 1983, the secondary school /of "gymnasium" type/ of Gunzenhausen organized a wide collection of old aluminium, which is today a very useful wrapping material. For the production of 1 ton 15 ooo kWh are needed. Recycling of aluminium would represent the saving of 95 per cent of energy! However, there are some difficulties with the collection. In the mentioned month the school collected 300 kg of old aluminium.

didactics of biology, biology instruction, voluntary work, forms of organiuation, aluminium, raw material, FRG - 147317.

442. SOKOLOV, K.A.:
Uluščat rabotu učeničeskich proizvodstvennych brigad
/To improve the work of school volunteers/
Biol. v Šk., 59, 1985, No. 1, pp.55-58.

In October 1984, a seminar was held, "Experience of pupils´ voluntary work in RSFSR /Russian Soviet Federal Socialist Republic/in labour education and professional orientation of pupils". The seminar tried to solve important questions of increasing the effectivity of these forms of pupils´ work. At present, every member of the voluntary group undergoes a theoretical preparation in agrotechnical themes, and works under the leadership of qualified teachers and other experts.

didactics of biology, biology instruction, forms of organization, voluntary work, agricultural production, labour education, professional education, USSR - 147317.

443. Komárům zvoní hrana /The bell tolls for the mosquitos/
Věda a Tech. mládeži, 39, 1985, No. 19, p.7.

The student of Natural Science Faculty, Charles

University Prague, HANA KRÁTKÁ, participated in the SVOČ competition /Students scientific and professional activity/ with a work on the fight against mosquitos. She points to the use of Tolypocladium sp., which is an active infection agens of Culex pipiens larvae. She follows the influence of concentration of this fungus conines on the mortality progress and infection recycling, and the question of cultivation of the fungus.

didactics of biology, biology instruction, students´ scientific and professional activity, competition, insect, biological fight - Czechoslovakia - 147315.

444. Uczniowska sesja biologiczna w Szklarskiej Porebie /Pupils´ Biological Session in Szklarska Poreba/ Biol w. Szk., 38, 1985, No. 1, pp. 61-62.

In Szklarska Poreba on 27th May, 1984, a session of pupils´ biological section was held. It was entitled The Giant Mountains National Park. Young school people from the surroundings of the mountains took part in it. Protection of the Giant Mountains was the object of the session.

didactics of biology, biology instruction, forms of information, hobby club, session, nature conservation, National Park, the Giant Mountains, Poland - 147315.

445. ZABEL, E. - HEINZEL, I.:
Ernst-Haeckel-Schülerpreis 1984 /Ernst Haeckel Prize for 1984/
Biol. in der Sch., 34, 1985, No. 4, pp. 142-144. 1 photo.

The prize of E. Haeckel was awarded for the fourteenth time. The competition had 5o participants, all works witnessed care, interest and creative thinking. 7 works were awarded.

dudactics of biology, biology instruction, competition, forms of organization, secondary school, GDR - 147315.

446. DRTINOVÁ, Z,. -SITÁROVÁ, M.:
Nitra `84
Přír. vedy ve Šk., 36, 1984-1985, No. 2, p. 53.

In the days from 20th to 24th of June, 1984, in Nitra the VIth National Display of youth organization activity on secondary school was held. There were 20 theme fields of interest.

didactics of biology, biology instruction, students scientific and professional activity, forms of organization, competition, Czechoslovakia - 147315.

11.4 Biology Olympiades, biological competitions

447. Empfehlungen und Überlegungen zur Gestaltung von Lehrplänen für den Computer. Einsatz im Unterricht der allgemeinen bildenden Schulen /Recommendations

and contemplations to use computer for preparation of teaching curricula in schools of general education/ Der math. und naturwiss. Unterr., 38, 1985, No. 4, pp. 229-236.

In biology curricula, there are complexes and themes in which computers can be used. It applies to physiology of metabolism, genetics, evolution, modelling, ecology, etc. Criteria for employing computers in instruction of biology are introduced.

didactics of biology, biology instruction, means of instruction, computer, FRG - 147311.

448. ENGLISH, J. - SIMPSON, J.:
Przygotowanie zwierzat do zimy /Animals prepare for winter/ Biol. w SZk., 38, 1985, No. 2, pp. 104-111. 11 fig., 1 tab.

Preparation of insects for winter is taught. Some parts are taught in the open,in parks and forests various phases of insects under the tree bark, on branches and leaves are looked for, possibility of surviving is discussed. For birds various bird tables and food are prepared, bird migration is discussed. Those birds which stay, are observed.

didactics of biology, biology instruction, insect, birds, hibernation, feeding + animal, Poland - 147313.

11.8 Fieldwork and summer science activities, scientific instruction trails

449. BELSHER, T.:
Une invasion réussie: Sargassum muticum Algae marinae Japonaise /Données biologiques, probémes et prospection/ /A successful invasion of Sargassum muticum, Japanese sea alga. Bibliographic data, problems and reesearch/ Biol. - Geol., 85, 1985, No. 1, pp. 115-119. 2 fig. tab.

The article deals with the invasion of the Japanese alga Sargassum muticum /JENDO/FENSHOLDi. This alga has come to Europe with oysters Crassostrea gigas. First reports are from 1973 from southern England. From there the alga came to other European coasts of the English Channel. Its biology, reproduction, dynamics of invasion and gathering is described.

didactics of biology, biology instruction, botany, algae, fieldworks, France 147317.

450. CATHALA, M. and coll.:
Un milieu lacustre. Documents concernaut le Lac d'Annecy /Lake environment. Documents on d'Annency Lake/ Biol.-Geol., 85, 1985, No. 1, pp. 121-153. 17 fig., 13 tab.

Lake d'Annecy has become a basis for ecological and economic investigation. There is a hydro-biologic research station of the national institute of environmental control. In 1972, the station was awarded a prize for protection of the lake environment. The research work of the station is described. The conclusion shows that protection is possible and brings positive results.

didactics of biology, biology instruction, nature conservation, naturel environment, ecology, lake, hydrobiology, France - 147317.

451. MOODY, D.:

Assessing Stream Water Quality

The Amer. Biol. Teacher, 47, 1985, No. 6, pp. 359-361. Lit. 16, 1 tab.

The author describes technique and equipment for assessing stream water quality. He himself has used the described method on the secondary school lower and higher grade and at high schools. Pupils study various parts of streams and various substratum of the bottom. Material for laboratory work is collected, necessary literature and tables for determining the quality of water according to the gathered organisms. Waters are then classified as heavily polluted, medium and lightly polluted, and pure.

didactics of biology, biology instruction, fieldwork, limno-biology, purity, water, research, USA - 147317.

452. O´ROUSKE, N.:

Use of "microscopic" point quadrats to measure very small areas

The Sch. Sci. Rev., 66, 1985, No. 237, pp. 714-715. 1 fig.

The described method of measuring very small areas is suitable for ecologic work, when for instance the percentage of soil covered with plants is followed. It is also used to measure irregular areas. The way of use is introduced in Nuffield Advanced Biology.

didactics of biology, biology instruction, ecology, fieldworks, measuring, Great Britain - 147317.

11.9.4 Group instruction

453. PEULEKE, H.P.:

Planung und Gestaltung des Lernens in Schülergruppen - Erfahrungen und Vorschläge /Planning and conception of learning in groups - experience and suggestions/

Biol. in der Sch., 34, 1985, No. 6, pp. 225-230. Lit. 4.

It is important to respect individuality of pupils in instruction of the class. Group instruction can be the means of differentiation. It is demanding especially as far as organization and planning are concerned. Optimal number is 4-5 pupils and every group has its leader. The author describes three themes taught in groups: Immunity, harmfulness of smoking, relations of organ systems.

didactics of biology, biology instruction, human biology, GDR - 147313.

454. HUNNESHAGEN, H.:

Zur Persönlichkeitsentwicklung jedes Schülers /To individual development of every pupil/

Biol in der Sch., 34, 1985, No. 9, pp. 328-330. Lit. 4.

Also in secondary schools of general education /the "gymnasium" type/ it is necessary to develop the personality of pupils. In 12th class there are suitable themes from physiology, ontogenesis, genetics - in which it is possible to persevere the forming of attitudes, opinions, behaviour. The author has had good results when using elements of collective learning and organizing of group instruction. Some examples of combining group work and written tasks are mentioned.

didactics of biology, biology instruction, cooperative forms, group instruction, physiology, genetics, ontogenesis, GDR - 147313.

12.2 Teacher's preparation for instruction, for a lesson and for other organizational forms of biology instruction, the strategy of instruction

455. BÍLÁ, M.:

Z vyučovacej hodiny prvouky v 2. ročníku /From primary instruction in 2nd form/

The theme Family and Society has a part called At the post office. A detail preparation for instruction is brought here, together with the analysis of the instruction period.

didactics of biology, biology instruction, primary instruction, basic school, 2nd class, instruction period, Czechoslovakia - 147313.

456. FREJLAK, S.:

Jak przezwyciezać aktualne trudnosci w realizacji programów nauczania biologii /How to overcome topical difficulties in the realization of biology syllabi/ Biol. w Szk., 38, 1985, No. 2, pp. 67-70. Lit. 13

Main directions of teacher's preparation for realization of the new syllabi are discussed, the talk being about a teacher non-specialist without necessary approbation. A suitable didactic and scientific literature is listed. Recommended is cooperation with institutes and organizations, like the Institute of school syllabi, Institute for further education of teachers, Institute of pedagogical research, etc.

didactics of biology, biology instruction, teacher, cooperation, pedagogical institute, Poland - 147313.

457. HUNNESHAGEN, H.:

Vorschläge zur Planung des Stoffgebietes "Ökologie", Klasse 11 /Suggestions for planning the theme Ecology in 11th form/

Biol. in der Sch., 34, 1985, No. 2/3, pp. 68-71. Lit. 3.

The author´s conception of the theme instruction is introduced. Her conception differs from what the methodical handbook recommends. She analyses demands on pupils´ work - knowledge, skills, abilities, understanding, etc., and then recommends her own division of the theme into 22 periods.

didactics of biology, biology instruction, preparing instruction, teacher, instruction planning, ecology, 11th class, secondary school, GDR - 147313.

12.2.1 Teacher´s preparation for botany instruction

457. ALTMANN, A.:

Několik poznámek k transpiraci rostlin /Some remarks on plant transpiration/

Přír. vědy ve Šk., 36, 1984-1985, No. 6, p. 214.

The author brings some remarks useful for the teacher when preparing the theme Life functions on the level of higher plants, drawing of mineral substances by roots and other parts of plants, and photosynthesis. The knowledge of transpiration is very important. Pupils´ knowledge, however, is very insufficient. Important is the author's remark on relation of water flow in plants to energy consumption. Transpiration uses potential water fall-down between soil and atmosphere without using its own energy.

didactics of biology, biology instruction, botany, preparing instruction, water + flow, photosynthesis, secondary school, secondary school of general education /the "gymnasium" type/, Czechoslovakia - 147313.

458. BAADE, H.:

Soziale Erfahrungen der Schüler in den Unterricht einbeziehen! /To use pupils' social experience in instruction/

Biol. in der Sch., 34, 1985, No. 10, pp. 366-368.

A possible motivation in biology instruction is the using of social experience of pupils, as well as regional elements.

didactics of biology, biology instruction, botany, preparing instruction, improving, GDR - 147313.

459. DIETRICH, W. - MEIER, U.:

Torfstechen bedeutet harte Arbeit /Turf exploit is hard work/

Unterr. Biol., 9, 1985, No. 109, pp. 15-17.

Before 50 years, turf was used as fuel. In a turf museum, implements can be seen. But the authors inform about modern exploitation of turf by means of modern machines. The aim of the instruction is to find out how from plant remnents the turf originates, how it was exploited and how it is exploited today, and what is the use of turf today. This theme has two periods of instruction.

didactics of biology, biology instruction, teacher, turf, museum, FRG - 147313.

460. FLANNERY, M.C.:

Potatoes, Tomatoes and Teaching

The Amer. Biol. Teacher, 47, 1985, NO. 2, pp. 109-111. Lit. 16.

The author teaches in New York, her pupils have no experience with agriculture, they know nothing about growing vegetables, etc. In botany, the author therefore teaches about tomatoes end potatoes. She picks up interesting things about potatoes, about potato growing, and similarly discusses tomatoes.

didactics of biology, biology instruction, botany, vegetables, root-crops, USA - 147313.

461. GERHARDT-DIRCKSEN, A.:

Anregungen zu mikroskopischen Arbeiten. Vielfalt der Stellen der Organisationsstufen bei Algen /Directions to microscopic work. Variety of the position of organization degrees of algae/

Prax. der Naturwiss. - Biol., 34, 1985, No. 7,
pp. 51-52. Lit. 3, 3 fig.

The author demonstrates individual degrees of thallus and stem development on examples of plant groups and progresses from the monocellular to the multicellular.

didactics of biology, biology instruction, preparing instruction, algae, angiospermae, thallus, stem, development - FRG - 147313.

462. GERHARDT-DIRCKSEN, A.:
Die Evolution der Pflanzen - ein Überblick /Evolution of plants - a survey/
Prax. der Naturwiss. - Biol., 34, 1985, No. 7,
pp. 1-18. Lit. 35, 21 fig., 4 information sheets.

The author offers the survey of plant evolution. A special attention is paid to vascular plants. Their individual development sequences are worked out in detail on the basis of examples - for instance phylogeny of the leaves. The author uses telom theory to deduce phylogenetic sequences. Drawings enable to prepare copies for transparencies. The example of instruction is for secondary grade II - evolution in biology instruction .

didactics of biology, biology instruction, botany, development, secondary school, FRG - 147313.

463. HAUSFELD, R.:

Feldfluren - früher und heute /Fields in the past and today/

Unterr. Biol., 9, 1985, No. 108, pp. 26, 31-32. Lit. 5, 1 fig., 1 worksheet, 1 tab.

Since the fifties there have been great regional changes concerning growing of cultural plants. Weeds disappear from fields and there are efforts to protect them. The author prepares these problems for instruction. He discusses the development of field husbandry, field weeds and their assimilation, endangering of field weeds, excursions to fields, nature conservation.

didactics of biology, biology instruction, vegetable production,culturcoenosis, nature conservation, FRG - 147313.

464. HEINZEL, I.:

Ein Lernziel - viele Aufgaben /An aim of learning - many tasks/

Biol. in der Sch., 34, 1985, No. 1, pp. 20-22. 5 fig.

Personality of a pupil develops in activities. By giving them concrete tasks the teacher decides about the activities he wants from them and what help he is going to offer them. Tasks introduced here should serve as an inspiration for instruction practice.

didactics of biology, biology instruction, botany, reproduction + plant, blossom, inflorescence, GDR-147313.

465. HEINZEL, I.:

Viele Schüler zu Wort kommen lassen /To give word to more pupils/

Biol. in der Sch., 34, No. 6, pp. 233-235. 1 fig.

The author describes an instruction theme from botany. Her critical remarks are concerned mainly with the method of instruction management, in which usually the activity and independent work of pupils lack behind. She also discusses notes on blackboard, introduction of examples, etc.

didactics of biology, biology instruction, botany, independent work, notes, GDR - 147313.

466. HOFMAN, H.:

Die Abhängigkeit der Photosynthese von Aussenfaktoren - ein Unterrichtkonzept /Dependence of photosynthesis on outer factors - an instruction conception/

Prax. der Naturwiss. - Biol., 34, 1985, No. 3, pp. 41-46. Lit. 5, 4 fig., 2 models for copying, 1 tab.

Dependence of photosynthesis on outer factors of CO_2 concentration, temperature, light intensity, length of light wave are discussed and demonstrated. The article is for secondary grade II and contains also models for transparencies.

didactics of biology, biology instruction, botany, physiology + plant, photosynthesis, observation, experiment, transparency, FRG - 147313.

467. HÜLCKER, W.:

Nutzung der Arbeitserfahrungen der Schüler im Biologieunterricht der Klasse 9 /Using work experience of 9th form pupils in biology instruction/
Biol. in der Sch., 34, 1985, No. 10, pp. 360-365. Lit. 3.

To fulfil the aims of polytechnical education it is necessary to use pupils' experience from production practice. The situation in a Berlin school is described. The author mentions especially the possibilities of applaying practical experience in themes like "Acception of water and mineral salts through roots".

didactics of biology, biology instruction, botany, physiology + plant, preparing instruction, secondary school, 9th class, GDR - 147313.

468. JONKOVA, E.:

Našite zanimanija po bilkarstvo v VI klas /Our work with herbs in 6th form/
Biol. i Chim., 28, 1985, No. 2, pp. 47-50.

The author discusses the 6th form theme of a rare and medically significant plant. She introduces the possibility of mapping of such plants in connection with the improving of pupils' knowledge of botany and with learning about plant structure. Main attention is paid to medicinal herbs, their collection, etc. She wishes that her pupils have their own apothecaries with herbs.

didactics of biology, biology instruction, botany, forms of organization, voluntary work, herbs, basic school, 6th class, Bulgaria - 147313.

469. **MEYER**, G.:

Lebensraum Moor /Turf environment/

Unterr. Biol., 9, 1985, No. 109, pp. 4-10. 7 fig., 2 tab.

The author characterizes both types of turf, the lowland and the highland one. He describes their development and deduces conclusions from the layers of turfs. Also the surrounding forests and the flora and fauna in the past are relevant. In instruction the teacher speaks about turf and its origin, turf plants and animals and the utility of turf.

didactics of biology, biology instruction,botany, turf, environment, biocoenosis, FRG - 147313.

470. SCHÜLER, CH.:

Zur Einbeziehung von Schülern des fakultativen Kurses "Bodenfruchtbarkeit " in praktische Massnahmen zur Erhaltung der Bodenfruchtbarkeit /Pupils in optional course "Fertility of soil" and their joining in practice of soil fertility conservation/

Biol. in der.Sch., 34, 1985, NO. 2/3, pp.85-88. Lit. 1.

School in which the author works, has close contacts with a gardening enterprise, and the pupils can apply their knowledge there. They cooperated on growing of tomatoes and cucumbers. At the same time they study various factors in greenhouses /light, temperature, moisture, airing/, insect pest and possibilities of biologic fight against pest in greenhouses.

didactics of biology, biology instruction, botany, gardening, greenhouse, insect, biologic fight, plant + pest, GDR - 147313.

471. STOTTROP, U.:

Ein unterrichtsbegleitender Museumbesuch im Ruhrlandmuseum in Essen /Visiting Ruhrland museum as a part of instruction/

Prax. der Naturwiss. - Biol., 34, 1985, No.7, pp. 40-44. Lit. 9, 2 fig., 1 tab.

Some natural science museums offer a possibility to follow the development of organisms. Ruhrlandmuseum has documents of life in Carboniferous period. You can find here reconstruction of a swampy forest from the time before 300 million years. Such reconstructions are not possible without description of exhibited fossils. The description is a result of precise study of fossils.

didactics of biology, biology instruction, botany, development, museum, excursion, FRG - 147313.

472. STOTTROP, U.:

Erdgeschichtliche Zeitalter und Entwicklung der Pflanzen - eine Übersicht /Eras and periods of Earth and development of plants - a survey/
Prax. der Naturwiss. - Biol., 34, 1985, No. 7, pp. 54-55. 2 tab.

In graphic tabular representation, individual geological eras and periods are introduced, and the development of plants. A special stress is laid on the development of land flora.

didactics of biology, biology instruction, botany, phytopalaeontology, evolution theory, FRG - 147313.

473. SOVOVA, R.:

Urokt "Funkcia na lista. Izparenie na voda" /Theme of the period: Function of the leaf; evaporating of water/
Biol. i Chim., 38, 1985, No. 4, pp. 31-33.

An instruction period dealing with the theme "Function of the leaf and evaporating of water" is described. The author demonstrates various organizational forms and methods of instruction. The aim is to explain water transpiration in the plant and to show conditions enabling transpiration. The author stresses logical progress in instruction, analysis, synthesis, comparing and generalizing.

didactics of biology, biology instruction, botany, water + transpiration, physiology + plant, leaf, Bulgaria -

147313.

474. STEUCEK, G. L.- HILL, R.J.:

Photosynthesis 1 -an Assay Utilizing Leaf Discs

The Amer. Biol. Teacher, 47, 1985,No. 2, pp. 96-99.

Lit. 4, 5 fig.

Approximately before 3 milliatds of years photosynthesis on Earth developed, changed the whole planet and enabled development of all forms of life. Teachers ask how to demonstrate photosynthesis. The author recommends demonstration on the discs of the leaf surface. As soon as photosynthesis starts in the leaf, the disc rises and flows to the surface. The time needed for this is measured and shows intensity of photosynthesis. Before the experiment it is necessary to put discs into sucking liquid, which expels air from the leaf. Other experiments with leaf discs are described.

didactics of biology, biology instruction, botany, physiology + plant, photosynthesis, leaf, experiment, USA - 147313.

475. SVOBODOVÁ, M.:

Využití poznatků z ekologie mechorostů ve škole /Using the knowledge of Bryophytae in instruction/

Přír. vědy ve Šk., 36, 1984-1985, No.9, pp. 324-329.

3 fig., 3 tab.

The aim of the article is to suggest possibilities of using Bryophytae in science instruction in basic school, in secondary school biology instruction and in hobby clubs. The system of Bryophytae is worked out, their ecology, climate and other factors. There are 9 types of Bryophytae localities. The table introduces an index of most frequent mosses and Bryophytae. The tables bring discriminating signs of selected families, and identification key.

didactics of biology, biology instruction, botany, Bryophytae, mosses, identification key, basic school, secondary school of general education /gymnasium/, Czechoslovakia - 147313.

476. TARGOSZ, K.:

Gospodarka wodna roślin - transpiracja. Konspekt lekcji dla kl. III. LO o profilu biologiczno-chemicznym /Water economy in plants - transpiration. Conspectus of an instruction period for 3rd form of secondary school, biologic-chemical stream/

Biol. w. Szk., 38, 1985, No. 3, pp. 170-171. Lit. 2

The theme is plant transpiration. The aim is to understand physical and chemical qualities of water and their significance in plant water economy. The teacher progresses from the mechanism of vent opening, measuring of transpiration, to factors influencing transpiration grade, significance of transpiration, water balance of plants, the factor of water deficiency, ecologic forms of plants and their morphological-anatomical adaptability. Finally the informations are revised and homework prepared.

didactics of biology, biology instruction, botany, physiology + plant, transpiration, Poland - 147313.

477. TILLE, R.:

Vorschläge für die Behandlung der Pflanzen in den Klassen 5 to 7 /Hints to teaching about plants in 5th - 7th forms/

Biol. in der Sch., 34, 1985, No. 5, pp. 189-194. Lit. [illegible], 4 fig.

While the taxonomy of animals is transformed into pupil conscicusness from the aspect of unity of structure and function together with using ecologic relations, taxonomy of seed plants is mainly instroduced through morphologic description. Botany should therefore be explained from the aspect of evolution. The author recommends to divide plants into those with stem and those without it, similarly as animals are divided into vertebrates and invertebrates. Further division of plants should be into plants living in dry and those in moist biotopes.

didactics of biology, biology instruction, botany, identification key, basic school, 5th to 7th class, GDR - 147313.

478. WEHRENBERG, B.:

Tillandsia - ein Epiphyt /Tillandsia - an epiphyte/
Unterr. Biol., 9, 1985, No. 103, pp. 21-23. Lit. 4,
4 fig., 1 worksheet.

Tillandsia is used as a model of epiphyte for secondary level instruction in 7th-8th forms. The author recommends two instruction periods. In tropical rainforests only a little sunshine comes through the thick growth to the surface of the soil. Epiphytes grow here, plants growing on branches and bark of trees, even on telegraph wires. For water acceptance they have developed special structures. Model experiment demonstrates the way of water acceptance by means of sucking scales on the surface of the plant /Tillandsia usneoides/.

didactics of biology, biology instruction, botany, 7th-8th classes, FRG - 147313.

12.2.2 Teacher's preparation for zoology instruction

479. BIRO, D.:

Neurophysiologisch-kybernetische Analyse der Flugregelung beim Vogel //Neuro-physiologic-cybernetic analysis of bird flight/
Der math. und naturwiss. Unterr., 38, 1985, No. 7, pp.
424-432. Lit. 21, 11. fig.

A regulation system /similar to the human one/ controls and directs bird's flight. According to a model, the behaviour of a bird can be foretold - this can be proved by experiment. In further step there's a model of acceleration.

Didactics of biology, biology instruction, zoology, physiology + animal, vertebrates, experiment, model, FRG - 147313.

480. BIRKHEAD, T.R. - CLARKSON, K.:
The magpie as an aid to teaching behaviour and ecology
J. of Biol. Educ., 19, 1985, No. 2, pp. 163-168. Lit. 7, 5 fig.

Magpie /Pica pica L./ is a suitable object for studies in the fields. It is a prevalent bird in both agricultural and city areas of Great Britain. The authors demonstrate the possibility of ecologic and ethologic studies of the magpie near Sheffield. The objects of studies were marked with coloured rings. The studies concern population density, biology of nesting, social organizations. Magpie is a monogamous bird. Analysis of indigestible parts of food thrown out by magpies, show the kind and amount of food. The size of their territory is also followed - it is about 5 hectares. Magpies defend their territory on the borders. They make stores of food.

didactics of biology, biology instruction, zoology, ethology, ecology, vertebrates, Great Britain - 147313.

481. DOBIAS, H.W.:

Brutverhalten beim Maulbrüter Haplochromis burtoni
/Care for lay of Haplochromis burtoni/
Unterr. Biol., 9, 1985, No. 102, pp. 32-36. Lit. 2,
2 fig., 1 fig.,tab., 2 worksheets.

Behaviour of Haplochromis burtoni can be seen on a film. It can be also observed during instruction in classroom aquarium. The author demonstrates analysis of behaviour; the origin of behaviour is explained in connection with elements of evolution. This instruction subject covers two periods.

didactics of biology, biology instruction, zoology, ethology, fish, aquarium, observing, FRG - 147313.

482. DONATH, H.:

Schädling oder Schaderreger? /Pest or harm initiator?/
Biol. in der. Sch., 34, 1985, No. 7/8, pp. 278-279.
Lit. 5.

In conditions of ecologic balance there exists neither pest no useful species, because every species has a certain biological significance. Harmfulness and usefulness therefore result from the way of husbandry. The author recommends to substitute the notion "pest" by the notion"harm initiator",and to speak about "protection of cultivated plant" instead of "fight against pest". The introduced proposals are realizable in biology instruction in 6th form.

didactics of biology, biology instruction, zoology, protection + plant, basic school, 6th class, GDR - 147313.

483. DUNK, K.:

Adaptive Radiation am Beispiel der Beuteltiere /Marsupials - example of adaptive radiance/
Prax. der Naturwiss. - Biol., 34, 1985, No. 3, pp. 15 - 21. Lit. 10, 1 fig., 5 models for copying.

Present expansion of marsupials can be explained only on the basis of tectonics and movement of earth-crust. Marsupial fossils reach as back as to the Cretaceous period. Without competition has been the development of marsupials in Australia and South America. That is why striking convergences happened between mammals and marsupials. The adaptive radiation can be observed in quite a large number of marsupials like kangaroos. The author describes representatives of some species of marsupials like Didelphidae, Phalangerridae, Macropodidae and Dasynridae.

didactics of biology, biology instruction, zoology, evolution, mammals, vertebrates, Australia, FRG - 146313.

484. DYLLA, K.:

Schmetterlinge. Das Thema "Schmetterlinge im Unterricht" /Butterflies. Instruction theme "Butterflies in instruction"/

Unterr. Biol., 9, 1985, No. 104, pp. 2-5.

Butterflies have central significance in many nutrition chains. 30 - 40 per cent of them form nutrition of insect eating birds. Some butterflies are seriously harmful for cultivated plants, on the other hand, however, some species are endangered by extinction and need environmental control. Today, butterflies are an object of scientific research. It is possible to have some spe species of them in schools and observe them. Influence of man on butterfly environment is demonstrated.

Butterflies as theme of instruction belong to secondary grade II. Live objects, slides and films can be used.

didactics of biology, biology instruction, zoology, invertebrates, insect, nature conservation, observing, FRG - 147313.

485. ESCHENHAGEN, D.:

Schmetterlinge - Körperbau und Leistungen /Butterflies - structure and function of the body/

Unterr. Biol., 9, 1985, No. 104, pp. 6-10. Lit. 57, 5 fig., 1 tab.

We know more than 100 000 butterflies. They have common and different marks. Their ability to feel odours, tastes, images and sounds is strongly developed. They are discussed as taxonomic unit.

didactics of biology, biology instruction, zoology, insect, system, FRG - 147313.

486. HASSFURTHER, J. - RAUTENBERG, E.:
Gorilla und Orang-Utan leben in verschiedenen Etagen des Regenwaldes /Gorilla and orang-utan live in different level-areays of rain-forest/
Unterr. Biol., 9, 1985, No. 103, pp. 103, pp. 24-41. Lit. 18, 2 fig., 1 information sheet, 1 worksheet.

Tropical rain-forest is the environment of gorilla and orang-utan. The endangering of tropical forest endangers also both these species. Orangutan lives mainly in tree crowns, gorilla moves mainly on the ground. The pupils watch them both in the zoo and deduce conclusions about their way of life. The authors give directions concerning visits to zoological garden. The instruction covers 3 instruction periods. One period is in zoo. Gorilla and orang-utan are compared.

didactics of biology, biology instruction, zoology, forms of organization, excursion, zoological garden, FRG - 147313.

487. JEHNEN, R. - LICHTNER, H.D.:
Helfer am Nest. Zur Evolution altruistischer Verhaltensweisen /Help in nesting. To evolution of altruist behaviour/
Unterr. Biol., 9, 1985, No. 102, pp. 37-43. Lit. 15, 4

worksheets, 1. fig., 1 tab.

About 1 550 bird species have been seen at cooperative nesting, when individuals of one species help another species with nesting. This behaviour can be interpreted in various ways. The authors think it can be looking for experience for one´s own nesting, using the altruistic experience, increasing of one´s own abilities. The author brings several concrete examples for secondary level instruction.

didactics of biology, biology instruction, zoology, birds, ethology, nest, reproduction + animal, means of instruction, worksheet, FRG - 147313.

488. JUNGFER, K.H.:

Brutverhalten bei Fröschen /Frogs´ care of lay/

Unterr. Biol., 9, 1985, No. 102, pp. 22-24. Lit. 13, 1 fig., 6 photos.

Among frogs a varied care of eggs and tadpoles has developed. The more they look after their lay, the less number of eggs they lay. A concrete example for instruction is introduced - Phyllobates tricolor, family Dendrobatidae.

didactics of biology, biology instruction, zoology, amphibians, ethology, reproduction + animal, FRG - 147313.

489. LANDERER, J.:

Sollen wir nun die Vögel füttern oder nicht? /Should we feed the birds, or not?/

Unterr. Biol., 9, 1985, No. 108, pp. 14-16. Lit. 13, 1 worksheet.

Model instruction is for primary level, 4th form. A discussion with an expert ornitolog leads to conclusions concerning feeding of birds in winter. It is advisable to feed them only when it is necessary and with proper food.

didactics of biology, biology instruction, zoology, birds, feeding + animal, nutrition, basic school, 4th class, FRG - 147313.

490. MEINECKE, H.:

Die Hornisse /Hornets/

Unterr. Biol., 9, 1985, No. 108, pp. 17-19. Lit. 3, 1 fig., 1 worksheet, i tab.

Intrusions of man into environment and changes of environment have caused that the number of hornets fell down a lot. Also an unbelieveable people's fear of hornets sontributed to it. A healthy man survives 100 stings from a hornet.A model instruction explains hornet's behaviour, its life, building of the nest, laying of eggs, looking after larvae are described. In many parts of Europe there are no more hornets. A hornet is not more toxical than a bee or wasp. If there were death cases after hornet's sting, it was connected with the man's allergy. The author compares hornets, bees, wasps and bumble-bee. He recommends protection of hornets, because they eat lots of harmful insects. Model instruction is for 2 periods.

didactics of biology, biology instruction, zoology, insect, ethology, nature conservation, FRG - 147313.

491. **MEYER, G.:**

Saurier und ihre Jungen /Reptiles and their young/ Unterr. Biol., *9*, 1985, No. 102, pp. 48-49. Lit. 1, 1 worksheet.

Also palaeontological findings enable consluions on the relation of fossil reptiles to their young and to their lay of eggs. For instruction, the author adds a worksheet, with the help of which pupils work out conclusions of introduced findings of fossil reptiles, their nests and eggs, their young. Some of the fossil reptiles looked also after their young and protected them before carnivorous lizzards.

didactics of biology, biology instruction, zoology, palaeontology, reptiles, reproduction + animal, FRG - 147313.

492. **NEUBERT, D.:**

Unterrichtsvorschläge für die Stoffeinheit "Säugetiere"

/Klasse 5/ /Suggestions for instruction: mammals - 5th class/
Biol. in der Sch., 34, 1985, No. 12, pp. 469-475. Lit. 2, 6 fig.

The author introduces his own conception of the given thematical unit, which covers 3 periods of instruction. He formulates the educational aim of each period, points to the process of the instruction, and proposes the notes on blackboard. A special attention is paid to the closing period which serves to systemization and fixing of the instruction matter and to various forms of revision.

didactics of biology, biology instruction, zoology, mammals, forms of organization, basic school, 5th class, GDR - 147313.

493. NEUPERT, D.:
Vorschläge zur Unterrichtsgestaltung der Stoffeinheit 2.2. Lurche, Klasse 5 /Suggestions for theme conception Amphibians in 5th form/
Biol. in der Sch., 34, 1985, No. 10, pp. 373-380. Lit. 1, 4 tab.

The author suggests a new conception of the theme Amphibians. The positive side of it is more information and more formative effect. Theinstruction matter is divided into 3 instruction periods, each of which is precisely characterized as far as the process of instruction is concerned. The conception also contains a revision lesson stressing notion systems.

didactics of biology, biology instruction, zoology, amphibians, basic school, 5th class, GDR - 147313.

494. PETROVA, E.:

Obogytjavane na temata "vodni prici" s ekologično i prirodozaščitno sadaržani /More ecology and conservation content to the theme "Water birds"/
Biol.-Chim., 38, 1985, No. 4, pp.24-28. 4 tab.

The theme is prepared on the basis of ecologic knowledge and of the nature conservation aspect. The information on white stork and wild duck is the basis for an ecologic study of these birds.

didactics of biology, biology instruction, zoology, ecology, nature conservation, birds, water, Bulgaria - 147313.

495. REINDL, B.:

Zur Gestaltung des Unterrichts in der Stoffeinheit "Kriechtiere" /Klasses 5/ /To the conception of the instruction of the theme "Reptiles" in 5th form/
Biol. in der Sch., 34, 1985, No. 11, pp. 423-426. Lit. 1, 2 fig.

The author recommends a rearrangement of instruction units, gives reasons to her recommendation, introduces her idea of blackboard notes and suitable questions for a written form of examination including the suggestion of classification.

didactics of biology, biology instruction, zoology, reptiles, basic school, 5th class, record, exercise book, GDR - 147313.

496. SÍBRT, F.:

Výuka botaniky na základní škole a gymnáziu /Botany instruction in basic school and secondary school of general education -the "gymnasium" type/

Přír. vědy ve Šk., 36, 1984-1985, No. 7, pp. 243-245.

The article is a contribution to the conference "Botany and youth". The author tries to work out botany instruction in the 19th and 20th centuries in basic and secondary schools. He leads the history to 1948, when the Act of Unified School was passed in Czechoslovakia. He mentions syllabi and botany textbooks, and in detail works out Šula's textbook Botanika 6 and the new textbook, Přírodopis 5, of which he is co-author.

didactics of biology, biology instruction, botany, means of instruction, textbook, basic school, 5th form, 6th form, Czechoslovakia - 147313.

497. UHRUSKA, H.:

Pasozytnicze robaki obłe na przykladzie glisty ludzkiej. Konspekt lekcji klasy V. /Parasite round worms - example:

Ascaris. Conspectus for a 5th form period/
Biol. w Szk., 38, 1985, No. 2, pp. 111-112.

An instruction period for 5th form, theme Ascaris lumbricoides is worked out. Educational aims are stated, method of instruction, form of organization, means of instruction and literature for the teacher and the pupils. Progress of the instruction period is described.

didactics of biology, biology instruction, zoology, parasitism, basic school, 5th class, Poland - 147313.

498. ULRICH, R.:
Schmetterlingsschutz. Unterrichtsmodell für die Sekundarstufe I. 9. - 10. Jahrgang /Protection of butterflies. Instruction model for secondary school, grade I, 9th - 10th forms/
Unterr. Biol., 9, 1985, No. 104, pp. 20, 33-36. Lit. 13, 1 fig., 1 worksheet, 2 tab.

During excursions, pupils observe several types of environment and identify butterflies living in them. They find out the dicreasing number of butterfly population, and the damaging of their environment. Protection measures are worked out. The instruction is planned for 4 instruction periods: Our butterflies, How do butterflies live, Environment of our butterflies, Endangering and protection of butterflies.

didactics of biology, biology instruction, zoology, insect, nature conservation - FRG - 14731[illegible].

499. VILČEK, F.:

Poznámky k "Prehľadu prirodzeného systému živočíchov" v učebnici biologie pro 1. ročník. /Notes on the "Survey of the natural system of animals" in biology textbook for 1st form/

Přír. vedy ve Šk., 36, 1984-1985, No. 6, pp. 212-213.

The author explains some problems of systematics in the new model of natural science and biology instruction. He warns before the consequences of differences in teacher preparation at universities. He demonstrates recent changes in zoology systematics and points to necessary changes in syllabi and textbooks.

didactics of biology, biology instruction, zoology, systematics, modernization, Czechoslovakia - 147313.

500. WAGNER, I.:

Zum Stundenthema "Fortbewegung der Fische im Wasser" /On the theme "Moving of fish in water"/

Biol. in der Sch., 34, 1985, No. 10. p. 381.

On the basis of his own experience, the author recommends observing genuine object in instruction - the aquarium fish gupka. He uses an overhead projector for that. He introduces suitable questions which control the progress of observation, and adds a model fish which he dips in water.

didactics of biology, biology instruction, zoology, fish, genuine object, aquarium, model, GDR - 147313.

12.2.3 Teacher's preparation for instruction in human biology

501. ALEXANDER, R. Mc. N.:

Human Walking and Running

J. of Biol. Educ., 18, 1985, No. 2, pp. 135-140. Lit.12, 5 fig.

The author discusses human walking and running. A detail analysis of walking and running proves, that man walks and runs with the least losses of energy. Walking and running are compared.

didactics of biology, biology instruction, human biology, walking, running, energetic balance, Great Britain - 147313.

502. ARNOLD, D.:

Ranzen - TÜV. Unterrichtsmodell für die Primar- und Orientierungsstufe und Sonderschule /1.-6.Schülerjahrgang/ /Satchels - instruction model for primary level, for orientation level and special schools - 1st to 6th schoolyear/

Unterr. Biol., 9, 1985, No. 106, pp. 15-19. Lit. 40, information sheet for parents, 3 fig., 1 fig.tab., 1 tab.

The author discusses the problem of heavy satchels

Are they not carried on back, but in one hand, they often lead to spine damages. The information sheet stresses necessary cooperation between family and school and a constant control of satchel content. Many pupils have deformation of the spine. Satchels should be carried on backs, and their weight must not be more than 10 per cent of the physical weight of the pupil. Regulations are introduced for parents and children.

didactics of biology, biology instruction, human biology, kytosis, scoliosis, hygiene, FRG - 147313.

503. BARMAN, CH. and coll.:

Sickle Cell Anemia: "Interesting Pathology" and "Rarely Told Stories"

The Amer. Biol. Teacher, 47, 1985, No. 3. pp. 183-187. lit. 10, 4 models for pupils.

Problems of sickle cell anemia are worked out - the disease with an abnormal form of haemoglobin. In USA 8 per cent Negroes suffer from it. Sickle cell anemia is in relation to malaria: people don't die of malaria, if they suffer from sickle cell anemia. Only 0.8 per cent of white people in USA suffer from sickle cell anemia, whereas in some regions of Africa and Southern Europe almost 25 per cent of population suffer from the disease.

didactics of biology, biology instruction, human biology, disease, anemia, USA - 147313.

504. BERNDT, J.:

Falsche Beanspruchungen von Schülern? /False demands on pupils?/

Unterr. Biol., 9, 1985, No. 106, pp. 44-46. Lit. 15, 1 photo, 2 tab.

School cannot tolerate bad working conditions and overburdening of pupils. The author suggests a suitable and rational organization of children's day at school. Factors endangering the pupil at school are spoken of. The lack of school system was discussed at a public meeting with parents and pupils. A suggested organization of school day should remove psychologic diseases of pupils and teachers, dicrease their agressiveness and so improve the development of pupil's personality.

didactics of biology, biology instruction, human biology, physiologic psychology, agressiveness, day organization, FRG - 147313.

505. BLÜTHGEN, S.:

Wie wir bewusst atmen können /How can we be aware of our breathing/

Unterr. Biol., 9, 1985, No. 106, pp. 28-30. Lit. 7, 1 fig.

The loss of natural deep breathing leads to a permanent encumbering of blood circulation and other diseases of blood circulation and respiratory system caused by civilization. An instruction model draws attention to correct breathing and its significance.

didactics of biology, biology instruction, human biology, circulation system, breathing system, FRG - 147313.

506. BODE, H.:

AIDS - das erworbene Immundefekt-Syndrom /AIDS - acquired immunity deficiency syndrom/

Unterr. Biol., 9, 1985, No. 107, pp. 45-47. Lit. 2, 2 tab.

AIDS, a new infectious disease, appeared for the first timein USA and then in Western Europe. All patients acquire a weakening of the immunity system and consequently many infections and tumors occur. It seems that the virus has been found, but there are yet no medicaments, and no inoculation substances. Endangered at the most are people who often change sexuel partners; infection can follow a common use needles, a repeated blood transfusion, etc.

Didactics of biology, biology instruction, human biology, contagious and infectious diseases, virus, FRG - 147313.

507. DVOŘÁK, F.:

Poznámky k tematickému celku "Přehled přirozeného systému živé přírody" v učebnici biologie pro 1.roč. gymnázií /Notes to the theme "Survey of natural system of live nature" in biology textbook for 1st form of secondary schools of general education- the"gymnasium"type/ Přír. vědy ve Šk., 36, 1984-1985, No. 4, pp. 124-127. Lit. 3, 2 fig.

The author's notes have the form of a brief teacher's handbook to a new textbook of biology for the 1st form of gymnasium. He wishes to add facts to individual chapters of the textbook and to give directions of methodical progress. Notes concern the significance of bacteria and algae.

didactics of biology, biology instruction, systematics, secondary school of general education /the "gymnasium" type/, 1st class, Czechoslovakia - 147313.

508. ENGEL, C.:

Verhalten des Menschen aus der Licht der Sozialbiologie /Human behaviour from the aspect of social biology/ Unterr. Biol., 9, 1985, No. 110, pp. 52-55. Lit. 19, 3 fig.

Central thesis of social biology has been developed on the population of pupils. The pupils observe arms of man /models/ from stone age and have to express how old they are. Social biology of the stone age is followed and its influence on man´s development.

didactics of biology, biology instruction, human biology, history, development + man, FRG - 147313.

509. GROPENGIESSER, H. - GROPENGIESSER, I.:
Gesunde Schule /Healthy school/
Unterr. Biol., 9, 1985, No. 106, pp. 40-42, Lit. 14, 1 fig., 2 tab.

The author discusses the pupils´ attitude towards genuine object of instruction. Some pupils feel a strong dislike for live objects, for dead ones, even for individual organs, some of them fear them, and refuse to work with them. The attitude of pupils from cities and towns on the one hand, andof pupils from villages on the other hand, the attitude of boys and of girls is investigated. Assessed is also their attitude towards domestic animals.

didactics of biology, biology instruction, human biology, means of instruction, genuine object, FRG - 147313

510. HAUSER, B.:
Masern - eine Infektionskrankheit /Measles - an infectious disease/
Unterr. Biol., 9, 1985, No. 107, pp. 22-25. Lit. 14, 2 worksheets.

Measles are discussed, the most frequent child disease, from which every year about half a million children suffer in FRG and 80 - 100 of them die. To go through the disease means immunity for the whole life. Symptoms and a typical progress are discussed, and it is explained, why a man can have measles only once in his life. Infection, therapy, profylaxis, etc. are spoken of. The instruction matter is divided into 2 instruction periods.

didactics of biology, biology instruction, human biology, infectious disease, FRG - 147313.

511. JANKOV, P. - PRIEL, J.:
Beeinflussung menschlichen Verhaltens durch Autorität
/Influence of authority on human behaviour/
Unterr. Biol., 9, 1985, No. 110, pp. 40-44. Lit. 10,
2 workexercises.

An instruction model of ethology of man for secondary grade II is worked out. Man is a member of a hierarchy organization of society where every individual stands either in subordinate or in superior position and has experienced authority. The pupils should feel the social ladder and grasp the necessity, but also the danger of obedience. Human behaviour is the result of a long line of factors. A seeming form of obedience, readiness to obedience and necessity of obedience are discussed in instruction.

didactics of biology, biology instruction, human biology, FRG - 147313.

512. KATTMANN, U.:

Humanethologie im Unterricht? /human ethology in instruction?/

Unterr. Biol., 9, 1985, No. 110, pp. 2-8. Lit. 85, 11 photos, 3 fig.

The author tries to solve the question of human ethology as a school subject. He demonstrates a model instruction of this subject. Man does not have inborn behaviour, but tendency and dispositions to a behaviour. There are varieties of human behaviour. Possibilities of comparing with animals arelimited. History of ethology is surveyed from Heinroth to Tinbergen, Lorenz. The author draws conclusions for human ethology instruction in schools.

didactics of biology, biology instruction, human biology, ethology, FRG - 147313.

513. KOCH, H.:

Familienbilder /Pictures of family life/

Unterr. Biol., 9, 1985, No. 110, pp. 14-17. Lit. 6, 12 photos, 2 fig.

A model suggestion for instruction on primary level /4th form/ and orientation level. Forms of family life are studied. In the classroom there are pupils of different experience of family life. Relations between father and mother, between parents and children, among relatives, relations between generations, on the secondary level also family in human evolution are duscussed. Instruction is focused on family scene, on the question what family means. In the end the pupils paint their families.

didactics of biology, biology instruction, ethology, human biology, family, evolution, FRG - 147313.

514. KRÄMER-BRAND, F.:

Der Vater in der heutigen Gesellschaft /Father in present society/

Unterr. Biol., 9, 1985, No. 110, pp. 45-46. Lit. 22, 4photos.

The position of father in the family and in the society is studied from the aspect of ethology and sociology. To find out the position of father, pupils prepare pictures from magazines, follow the picture of their own father and of the generalized father in commercials. Experience says that pupils show good results first to their fathers, but bad results to their mothers.

didactics of biology, biology instruction, human biology, ethology, family, social psychology, FRG - 147313

515. KRÜGER, L.:

Eine Variante der Unterrichtsgestaltung zur Stoffeinheit "Hormone" /Klasse 8/ /A variant of the instruction conception of "hormones" in 8th form/

Biol. in der Sch., 34, 1985, No. 2/3, pp. 92-93.

Biology syllabi for 8th form plan 3 instruction periods for the instruction of hormones: 1. hormone system, 2. regulation of sugar level in blood, 3. diabetes. The author analyses the content of three periods, introduces parallels and differences between the conception and methodical handbook.

didactics of biology, human biology, hormone, basic school, 8th form, GDR - 147313.

516. LAMMERT, K. - LAMMERT, F.:

Schmetterlinge brauchen "Unkraut". Unterrichtsmodell für die Primarstufe, 3. - 4. Jahrgang /Butterflies want "weeds". A model instruction for primary level. 3rd- 4th form.

Unterr. Biol., 9, 1985, No. 104, pp.13-16. Lit.7, 1 fig., 1 worksheet, 2 tab.

Monophagous butterfly species depend on one nutrition plant. With the extinction of such plant also the number of the butterfly species population falls down. Instruction matter is divided into 4 instruction periods: Behaviour of butterfly caterpillars, What do caterpillars eat, Life cycle of butterfly, Butterflies are endangered.

didactics of biology, biology of instruction, [illegible], insect, reproduction + animal, observation, experiment, working sheet, FRG - 147313.

517. LETHMATE, J.:

Kinderspiel. Zur Entwicklung von Gechlechtsunterschieden /Children play. To the development of sexual differences/ Unterr. Biol., 9, 1985, NO. 110, pp. 34-39. Lit.22, 3 fig., 1 fig. tab., 1 worksheet, 2 tab.

Instruction model for secondary grade II prepares the development of sexual differences of ethologic and psychologic character. We may observe these differences in children play. In biology instruction, the research of this phenomenon can be performed. Results are compared and critically assessed. Instruction model works out: Origin of sexual differences, Children play, Development of model sexual differences.

didactics of biology, biology instruction, human biology, play, research, sexuality, FRG - 147313.

518. LÜTKENS, R.:

Homo scholaris

Unterr. Biol., 9, 1985, No. 110, pp. 20-22. Lit. 12, 1 photo, 1 worksheet.

Model instruction for secondary grade I, 10th year, and for the facultative subject - ethologc studies of man. The pupils assume the role of an extraterrestrial explorer who prepares ethogram of "homo scholaris". Model instruction covers 3 instruction periods: Intelligent creatures investigate school areas, School creatures, Comparing man and other animals.

didactics of biology, biology instruction, human biology, motivation, investigation, FRG - 147313

519. MANOVA,M. - SVEŠČAROVA, L.:
Razvivane poznavatelnite interesi na učenicite v svobodnizbivaemata podgotovka pri temata "Imunitet" v X klas
/Development of cognitive interests of pupils in a free preparation to theme "Immunity" in 10th form/
Biol. i Chim., 28, 1985, No. 2, pp. 38-44. 2 fig., 3 tab.

Analysis of pupils' cognitive interests is demonstrated on the theme Immunity. New opinions of man's immunity are discussed. The instruction matter is an example of interdisciplinary relations between biology and chemistry.

didactics of biology, biology instruction, human biology, immunity, Bulgaria - 147313.

520. MOISL, F.:
Immunbiologie /Immunobiology/
Unterr. Biol., 9, 1985, No. 107, pp. 5-12. Lit. 27, 9 fig.

This is the basic study to the copy devoted to immunology and recent discoveries in this discipline. The author introduces all that is known today of the immunology system, immunity reaction and immunity defect, and shows the possibilities of using these informations in the fight against cancer. The theme is worked out for instruction.

didactics of biology, biology instruction, human biology, immunity, alergy, FRG - 147313.

521. NEUHÄUSER, H.:
Kurze übersichtliche Merktexte /Short texts to remember/
Biol. in der Sch., 34, 1985, No. 11, p. 422.

Short, lucid textx enable pupils to find out connections in the instruction matter, and have a positive influence on memory. The author shows how to use such texts in that part of instruction which concerns hygiene, hygiene of the eye, risk factors in cardiovascullar defects, hygiene of higher nervous system and with principles of correct nutrition.

didactics of biology, biology instruction, human biology, text, GDR - 147313.

522. POENICKE, H.W.:
Mechanische Modelle der Funktion von Nervezellen /Mechanic models of nerve cells function/
Prax. der Naturwiss. -Biol., 34, 1985, No. 8,
pp. 45-52. Lit. 4., 1 fig.

The author prepares 2 mechanical models showing the spreading of irritation in nerve cells with myelinized or unmyelinized axones. On myelinized axones the salta-tory spreading of irritation is demonstrated on one of the models. Model can be made by pupils with minimum expenses.

didactics of biology, biology instruction, human biology, model, nervous system, cell, fibre, shock, FRG - 147313.

523. PREISSLER, P.:

Vorschläge zur Unterrichtsgestaltung des Themas "Stoffwechsel des Muskels" /Klasse 8/ /Suggestions to a conception of the theme "Metabolism of muscles"/

Biol. in der Sch., 34, 1985, No. 1, pp. 32-35. 1 fig.

The author reports on her own conception of an instruction unit, which was successful in practice. As a motivation she lets a pupil do kneelbends for 1 - 2 minutes. The other pupils make notes about his behaviour. In the following discussion, the result of observing is assessed, the educational aim formulated and then the teacher explains the basis of muscle metabolism.

didactics of biology, biology instruction, human biology, experiment, observing, motion system, basic school, 8th class, GDR - 147313.

524. PRESS, N.:

The Devil in the Bioethic Classroom

The Amer. Biol. Teacher, 47, 1985, No. 2, pp. 94-95.

The question of evil in ethology of man is on the programme in biology - with the interdisciplinary relation aspect - and the teacher of humanities is also present. Pupils try to create model of evil and model of good in the past, in the present and in the future. Modern devils have a magic power - they have control over atom bomb and endanger the whole world.

didactics of biology, biology instruction, human biology, ethology of man, USA - 147313.

525. REISS, J.:

Luft und Licht im Klassenzimmer /Air and light in the classroom/

Unterr. Biol., 9, 1985, No. 106, pp. 31-35. Lit. 10, 5 fig., 3 worksheets.

Instruction model for secondary grade II works out the question of hygiene of school environment, of air and light in classroom. The equipment of the classroom must agree with health-care demands of today. Pupils investigate intensity of light in different parts of the classroom, temperature rise and fall during the day, relative humidity and content of CO_2. The importance of airing the classroom during the day is stressed.

didactics of biology, biology instruction, human biology, hygiene, health-care directions, FRG - 147313.

526. ROTHFUCHS, G.:

Elterninformation über Infektionskrankheiten /Information about infectious diseases for parents/

Unterr. Biol., 9, 1985, No. 107, pp. 13- 15. 6 photos.

The article informs about infectious diseases which endanger the pupils of basic schools. There is a calender of inoculation, information about the origin of infectious diseases, about protection against them, about identification of children infectious diseases and how to nurse a sick child. There is also a list of children diseases.

didactics of biology, biology instruction, infectious diseases, information, parents, FRG - 147313.

527. ROTHFUCHS, G.:

Schlangenserum kann Leben retten /Snake serum can save life/

Unterr. Biol., 9, 1985, No. 107, pp. 16-20. Lit. 12, 1 fig., 2 worksheets, 1 tab.

Model instruction for orientation level /5th - 6th form/. From 2 700 species of snakes only 15 per cent are poisonous. One can recognize them after the form of the head, position and construction of teeth, pairs of poison teeth in the upper jawbone. Snake poison has a biological significance. Production of serum and use of it are described. The instruction is prepared for 5 - 6 periods.

didactics of biology, biology instruction, human biology, immunity, snakes, poison, basic school, 5th - 6th classes, FRG - 147313.

528. ROTTLÄNDER, E.:

Grippeviren und Grippeschutzimpfung /Influenza viruses and inoculation against influenza/
Unterr. Biol., 9, 1985, No. 107, pp. 30-35. Lit. 6, 1 information sheet, 2 worksheets, 2 fig.

In spite of the protective inoculation, many people fall ill with influenza every year. Sometimes influenza is an epidemy - caused by the mutation abilities of the virus. Model instruction works out the picture ofinfluenza progress, protective inoculation and the socio-economic significance of influenza. The instruction is planned for 2 periods.

didactics of biology, biology instruction, human biology, infectious diseases, influenza, virus, FRG - 147313.

529. RÜLLER, H.:

Pygmäen - Sammler und Jäger im Regenwald /The Pygmies - collectors and hunters in tropical rain-forest/
Unterr. Biol., 9, 1985, No. 103, pp. 42-46. Lit.15, 2 fig., 3 worksheets.

Instruction model for secondary grade I /9th - 10th form/. In tropical rain-forest in central Africa there live the Pygmies, whose existence is connected with this environment. They are collecters and hunters. On the edge of the rain-forest there live the Negroes of Bantu tribe, with whom the Pygmies exchange goods. However, the rain-forest is exploited, diminishes, and that is why the Pygmies' environment also diminishes. In 3 instruction units, pupils solve the problem, whether there still is going to be room for the Pygmies in the rain-forest.

didactics of biology, biology instruction, human biology, ecology, forest, man, FRG - 147313.

530. SEHMRAU, W.:

Vorschläge zur Behandlung der Atmung in Klasse 8 /Suggestions for teaching Breathing in 8th form/

Biol. in der Sch., 34, 1985, No. 12, pp. 463-465.

2 fig., lit. 4.

Breathing must be taught as a metabolic process connected with loosening of energy and that is why the notion breathing in 8th form differs from breathing as taught in 5th and 6th forms. The author has his own conception based on the stress of aerobic metabolism in cells.

didactics of biology, biology instruction, human biology, breathing [illegible], GDR - 147313.

531. SCHMIDT, H.:

Die Bedeutung der adaptiven Radiation in der Humanevolution /The significance of adaptive radiation in human evolution/

Prax. der Naturwiss. -Biol., 34, 1985, No. 3, pp. 23-35. Lit. 13, 1 fig., 6 worksheets.

Recent African discoveries of man's ancestors were performed and worked out. This enables new knowledge of the drift of continents, of the origin of seas, upheavals and motions of Earth crust, changes of climate and vegetation as their consequence for the last 25 million years.

didactics of biology, biology instruction, human biology, evolution, man, adaptation + man, FRG - 147313.

532. SCHNEIDER, I.:

"Kindchenschema" - Untersuchung einer Originalarbeit /"Childscheme" - Investigation of an original work/

Unterr. Biol., 9, 1985, No. 110, pp. 23-33. Lit. 15, 1 foil, 3 fig., 1 worksheet, 2 tab.

Model instruction for secondary grade II. By the notion "Childscheme" is meant the combination of streaks which evoke spontaneous affection in the observer. Instruction is planned for 3 instruction period.

didactics of biology, biology instruction, human biology, investigation, child,scheme, FRG - 147313.

533. SÍBRT, F.:

Učivo o činnosti srdce a dýchání v biologii člověka na základní škole /Teaching about heart activity and breathing in human biology in basic school/
Přír. vedy ve Šk., 36, 1984-1985, No. 9, pp. 329-330. Lit. 6.

The article stresse practical significance of selected notions and data concerned with the instruction matter on outer expressions of heart activity and breathing. Their acceptance is important for the most varied situations of daily life.

didactics of biology, biology instruction, human biology, breathing + man, heart, basic school, 7th class, Czechoslovakia - 147313.

534. UHRUSKA, B.:

Budowa i funkcje centralnego układu nerwowego /Structure and function of central nervous system/
Biol. w Szk., 38, 1985, No. 1, pp. 60-61.

It is a preparation of methods, form of organization, literature for pupil and teacher, means of instruction /film -Human Brain/ for an instruction period concerned with the structure and function of central nervous system.

didactics of biology, biology instruction, human biology, nervous system, means of instruction, Poland - 147313.

535. WHALEN, T. A.:

An Easily Constructed Device for Teaching Some of the Events in the Nerve Impulse

The Amer. Biol. Teacher, 47, 1985, No. 3, pp. 169-171. Lit. 7, 3 fig.

In some textbooks the progress of nerve irritation by nerve fibres is not correctly explained. The author describes polarization, hyperpolarization, the shifting of ions Na^+, permeability of membrane, and the like. He follows a different explanation in biology textbooks and points to the possibility of demonstrating the nerve impulse through nerve fibres on electric models.

didactics of biology, biology instruction, human biology, nervous system, cell, USA - 147313.

536. WILHELMI, M. - WILHELMI, W.:

Allergien /Allergies/

Unterr. Biol., 9, 1985, No. 107, pp.26-29. Lit. 8, 1 fig., 1 worksheet, 1 tab.

Model instruction for secondary grade I works out the ever increasing number of allergies, their causes and possibilities of prevention and therapy. In the FRG today 25 million of people suffer from allergies. Instruction is planned for two instruction periods.

didactics of biology, biology instruction, human biology, allergy, immunity, FRG - 147313.

537. WINDELBAND, A.:

Hinweise für den Unterricht über die Entwicklung des Menschen aus tierischen Vorfahren /Klasse 10/ /Directions for the teaching of man development from animal ancestors - 10th form/

Biol. in der Sch., 34, 1985, No. 2/3, pp. 71-78.

Lit. 17.

Recently several new pieces of knowledge in palaeontology and archaeology have been gained by means of discoveries of new fossils, improved methods of work with fossils, etc. This article informs about the last discoveries. The author calls attention to some terminological obscurities. At the end of his article the author speaks about Australopithecus and about the behaviour and activities of hominides.

didactics of biology, biology instruction, human biology, evolution, hominization, GDR - 147313.

538. BENČEVA, B.:

Izpolzuvane na diskysijata v uroka "Inbridingat v selekcijata na rastenijata i životnite pri svobodnoizbiratelmata podgotovka v XI klas /Discussion in the performance of the theme "Inbreeding in plant and animal selection" in selective subject of biology in 11th form/

Biol. i Chim., 28, 1985, No.1, pp. 36-38.

539. CROSS, R. and coll.

Towards the teaching of the new technologies

The Austr. Sci. Teachers J., 31, 1985, No. 1, pp. 38-45. Lit. 16.

The authors bring reasons why schools should include into instruction discoveries of modern biotechnology. It is not yet an independent discipline, it develops in interaction with culture and technology. Studies of new techologies inform pupils about the significance of technology for a new society. The team of authors stress advantages of biotechnology courses in schools. They also speak about the use of laser and optical fibres and about alternative energetic sources.

didactics of biology, biology instruction, biotechnology, secondary school, high school, Australia - 147313.

540. DE FINA, A.V.:

A Pre-Outlined Approach for a Biology Curriculum

The Amer. Biol. Teacher, 46, 1985, No. 1, pp. 48-49. 3 fig.

Biology curriculum should be well known not only to the teacher, but also to every pupil. Pupils should receive copies of individual units and information to them. The author demonstrates his idea on the theme Cellular theory and cell structure.

didactics of biology, biology instruction, general biology, cell, curriculum, information, pupil, USA - 147313.

541. DOMKA, J.:
Zanieczytczenie wód. Lekcja otwarta w klasse V /Water pollution. An open lesson in 5th form/
Biol. w Szk., 38, 1985, No. 1, pp. 47-48. 2 fig.

Methodical association of biology teachers performed an open lesson of biology in 5th form - theme: Water pollution. A detail preparation for the lesson is described. It contains elements of environmental control directed to the nearest region. During instruction pupils work with water specimens.

didactics of biology, biology instruction, ecology, nature conservation, environment, water, basic school, 5th class, Poland - 147313.

542. FISCHER, C.:
Eine Variante zur Einführung in die Stoffeinheit "Genetik" /Klasse 10/ /A variant to the introduction to the theme "Genetics" in 10th form/
Biol. in der Sch., 34, 1985, No. 7/8, pp. 273-274. Lit. 4.

Pupils find genetics in 10th form difficult. It is therefore important that the biology teacher should provoke their interest in introduction periods devoted to genetics. The author analyses her own conception of the first two instruction periods - structure and function of cells and nuclear acid as bearers of genetic information.

didactics of biology, biology instruction, genetics, instruction + motivation , 10th class, GDR - 147313.

543. FISCHER, R.B.:

Goldenrods: An Ecological Goldmine

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 418-423. Lit. 12, 10 photos.

As model plants, the author works out the in USA widespread species of Goldenrods /Solidago sp./. They represent food and energy for a great number of animals: beetles as leaf-eaters, insect-eating birds, pollen-eaters, etc. Food chains are suggested - their basis is the substance of goldenrods. A possibility of working with them in the open is documented.

didactics of biology, biology instruction, ecology, Asteracae, field works, food chain, USA - 147313.

544. GRÖNKE, O.:

Zu höheren Lernergebnissen in Klasse 5 /For higher results of teaching in 5th form/

Biol. in der. Sch., 34, 1985, No. 7/8, pp. 283-289. Lit. 10.

Aims of instruction in 5th form are characterized.

Then the author pays attention to what the pupils know of homeland study from preceding years: about domestic plants and animals, about a healthy life style, plants and animals of the forest, water organisms, etc. He closes with the consideration of planning and a didactical conception of instruction.

didactics of biology, biology instruction, homeland study, basic school, 5th class, genuine object, excursion, interdisciplinary relations, GDR - 147313.

545. HASS, G.:

Zur Vermittlung von Erkenntnissen über Replikation und Verteilung der Erbinformation /in Klasse 12/ / how to offer the knowledge of replication and division of genetic information, in 12 th form/
Biol. in der Sch., 34, 1985, No. 1, pp. 33-34. 2 fig.

Explanation of the basis of relations between nucleus and cytoplasm. The author submits the fundamental didactic conception of the theme. Problems are caused mainly by relations between replication DNA and an even division of genetic information in first filial generation. The author recommends the use of two transparencies with a demonstration of the difference between mitosis and meiosis.

didactics of biology, biology instruction, genetics, transparency, secondary school, 12th class, GDR-147313.

546. JAENICKE, J.:

Unterrichtseinheit : Mitose und Zellteilung /Instruction unit: mitosis and cell division/

Prax. der Naturwiss. - Biol., 34,1985, pp. 7-20. Lit. 8, 9 worksheets, 2 transparencies.

The thematical unit "Mitosis and cell division" for secondary grade I and II is worked out. The instruction periods are minultely prepared.

didactics of biology, biology instruction, genetics, secondary school, FRG - 147313.

547. JAENICKE, J.:

Zellteilung - ein Abschnitt im Zellzyklus /Cell division - a section in cell cycle/

Prax. der Naturwiss. - Biol., 34, 1985, No. 8, pp. 1-6. Lit. 3, 1 fig., 3 tab, 2 transparencies.

Basic facts about cell cycle are described. The notion "chromosome" is built up. A tabular survey and photos from electronic microscope enable to understand mitosis. Mitosis and meiosis are compared.

didactics of biology, biology instruction, general biology, cytology, division + cell, FRG - 147313.

548. JUNGBAUER, W.:

Adaptive Radiationen /Adaptive radiations/

Prax. der Naturwiss. - Biol., 34, 1985, No. 3, 1985, No. 3, pp. 1-10. Lit. 16, 1 fig., 4 worksheets, 2 models for copying.

Evolution theory deals also with adaptive radiation, which, in relatively short time, could develop new species, under the condition of geographical isolation and of a loose ecological niche. Such conditions in geological periods originated for instance on volcanic islands. The author prepares adaptive radiation for instruction; pupils use worksheets with suitable examples after Ch. Darwin.

didactics of biology, biology instruction, general biology, evolution, Ch. Darwin, FRG - 147313.

549. KADURINA, E. - VYZCINOVA, S.:

Razvitie na tvorčeskoto myslene na učenicite črez priloženie na problemen podchod v ubučenieto po biologija - svobodnoizbiraemata podgotcvka v XI klas /Development of creative thinking by mean of problem approach towards biology instruction - a loosely selected preparation for 11th form/

Biol. i Chim., 28, 1985, No. 2, pp. 32-38.

The authors demonstrate the effectivity of problem instruction in the theme "Foundations of biophysics" for 11th form of secondary school, and follow the effect on the creative and logical thinking of pupils in different phases of the instruction period. A didactical experiment with problem instruction was performed in 2 schools and results show positive influence on logical thinking of pupils.

didactics of biology, biology instruction, biophysics, problem instruction, secondary school, 11th class, logical operations, Bulgaria - 147313.

550. KIMENOV, G.P.:

Za njekoi osnovni principi i nasoki na dejnost pri organizacijata i provеždaneto na ekologičnoto obrazovanije B ă B vuz / For some basic principles and courses of activity at organizing and performing of ecological studies in teacher training colleges/

Biol. i Chim., 28, 1985, No. 2, pp. 1-9. Lit. 14.

It is necessary to introduce a special preparation in ecology into teacher training courses. Terminology, foundations and development of ecology are worked out. Teachers must acquire a higher education in ecology so that they may be able to fulfil contemporary demands on education of pupils.

didactics of biology, biology instruction, ecology, teacher training college, teacher education, Bulgaria - 147313.

551. KITANOVA, V. - CHANDŽIEV, N.:

Škola za ekologično văzpitanie na učenicite po biologia /School for ecological education in biology/

Biol. i Chim., 28, 1985, No. 1, pp. 46-48. Lit. 7.

Ecological knowledge is not only a part of compulsory instruction, but also of voluntary interest groups. The author show good work in ecology in 29th secondary school, Sophia. They bring themes and prepare them for instruction.

didactics of biology, biology instruction, ecology, secondary school, 10th - 11th classes, Bulgaria - 147313.

552. KLAHM, G.:

Eine Sandgrube wird unter Schutz gestellt /A sandpit shall be taken under protection/

Unterr. Biol., 9, 1985, No. 108, pp. 23-25. Lit. 6, 3 fig.

The author describes an action of pupils who - in cooperation between school and authorities - undertook protection of a flooded sandpit, which has become home of amphibians. The pupils managed to save the biotype and offer the amphibians a possibility of survival.

didactics of biology, biology instruction, ecology, nature conservation, amphibians, FRG - 147313.

553. KNIEVEL, F.:

Meiose-Haplomitose einer diploiden Zelle /Meiosis-Haplomitosis of a diploid cell/

Prax. der Naturwiss. - Biol., 34, 1985, No. 8, pp. 21-44. Lit. 15, 15 fig., 4 worksheets.

The latest knowledge of cell division revises the mitosis and meiosis cell cycle. The author makes use of historical method and shows how the knowledge of cell division has gradually developed.

didactics of biology, biology instruction, general biology, cytology, division + cell, historical method, FRG - 147313.

554. KONOPNICKA, M.:
Jakie wnioski wynikają z analizy pierwiastków chemicznych wchodzacych w skład skorupy ziemskiej i organizmów? Konspekt lekcji dla klasy VIII /What conclusions result from the anapysis of chemical elements building the earthcrust and organisms? Conspectus of an instruction period in 8th form/
Biol. w Szk., 38, 1985, No. 1, pp. 49-53. Lit. 6, 4 fig.

Methodical contemplations to realization of the theme about the elemntal building of the earthcrust and organisms in the 8th form of basic school. The author shows the necessity of using interdisciplinary relations and knowledge acquired in 5th and 6th forms. The aim of the theme: to recognize the unity of anorganic and organic world. Tasks for highly talented pupils are added.

didactics of biology, biology instruction, general biology, element, analysis, basic school, 8th class, Poland - 147313.

555. KRAMER, B.P.:

Quantifizierung organismischer Ähnlichkeit. Eine Arbeitanregung zur Praxis numerisch taxonomischer Vergleiche /Quantification of organ similarity. An instigation to practice of numerical taxonomical comparison/

Der math. und naturwiss. Unterr., 38, 1985, No. 3, pp. 168-173. Lit. 4, 2 fig., 8 tab.

Numerical taxonomy attempts to achieve an objective classification of plants and animals into hierarchic relations of various categories. To its disposal it has experience from sign analysis. The article includes model instruction for secondary grade II. Numeric taxonomy considers signs like ecology, evolution, physiology, micro-morphology, pollen analysis, etc.

didactics of biology, biology instruction, taxonomy, numerical method, secondary school, FRG - 147313.

556. KUFNER, R.:

Ökologie und Evolution der Darwinfinken /Ecology and evolution of Darwin finches/

Prax. der Naturwiss. - Biol., 34, 1985, No. 3, pp. 11-14. Lit. 8, 4 fig., 3 tab.

Darwin finches are an example of adaptive radiation. The author reminds that often right relations are incorrectly interpreted. His article therefore brings information on systematics, ecology and evolution of this bird group.

didactics of biology, biology instruction, ecology, birds, Ch. Darwin, adaptation + animals, FRG - 147313.

557. LITSCHE, G.:

Intensive geistige Arbeit der Schüler im Unterricht /Intensive mental work of pupils during instruction/ Biol. in der Sch., 34, 1985, No. 9, pp. 327-328.

The author visited instruction in 10th class, where phylogenesis of organisms was taught. He positively assesses the teacher's work with textbook, using pupil's notes from lower forms, dialogues as instructin method, etc. He analyses the successful work of the teacher.

didactics of biology, biology instruction, general biology, phylogenesis, exercise-book, secondary school, 10th class, GDR - 147313.

558. ŁYBACKA, J.:

Formy ochrony przyrody na ziemi krotoszynskiej /Forms of nature conservation in Krotoszyn region/ Biol. w Szk., 38, 1985, No. 2, pp. 114-115.

A conspectus of instruction in 6th form of the basic school - theme: Forms of nature conservation in Krotoszyn region. The progress of instruction is worked out in detail.

didactics of biology, biology instruction, ecology, nature conservation, basic school, 6th class, Poland - 147313.

559. MEYER, G.:
Evolution als Kursthema in der Sekundarstufe II /Evolution as a theme of a course in secondary grade II/
Unterr. Biol., 9, 1985, No. 105, pp. 49-53.

The author designs the course on evolution for secondary grade II. The theme is accompanied by bibliography.

didactics of biology, biology instruction, literature, secondary school, FRG - 147313.

560. NOWAK, L. - MAJECKA, Z.:
WpŁyw czŁowieka na ekosystemy Konspekt lekcji dla klasy VIII/Man's influence on ecosystems. Conspectus of instruction for 6th form/
Biol. w. Szk., 38, 1985, No. 2, pp. 112-114.

The authors prepare the ecological theme about the influence of man or ecosystems for 6th form of basic school very carefully, including the forming of skills.

didactics of biology, biology instruction, ecology, environmental control, ecosystem, Poland - 147313.

561. RAJČEVA, L.:

Intenzifikacija na učebnija proces po biologija crez formirane i utvărždane na kačestveni kriterii za ocenka i samocenka na učenicite v učebnija trud /Biology teaching intensification by means of forming quality criteria for assessing and self-assessing in the learning of pupils/

Biol. i Chim., 28,1985, No. 1, pp. 38-42.

The author brings criteria for assessing and auto-assessing of a pupil's work in biology instruction. She discriminates motivation of cognition activity, interpretation of cognition activity, creativeness of cognition activity, learning-organizational activity, learning-informative activity and learning-creative activity of a pupil. She demonstrates these criteria in the theme "Stages of the development of evolution ideas in 19th century".

didactics of biology, biology instruction, assessing, instruction situation, evolution, Bulgaria - 147313.

562. RICHTER, H.:

Zur Einführung in das Stoffgebiet "Genetik"/Klasse 10/ /To the introduction into thematical unit "Genetics" in 10th form/

Biol. in der Sch., 34, 1985, No. 7/8, pp. 275-276.

Lit. 2.

When pupils are confronted with new thematical units, it is necessary to keep their interest and use their inquisitiveness: we can do that by accepting their experience, their formulations of problems, reading extracts from literature. The author describes her own practice.

didactics of biology, biology instruction, genetics, secondary school, 10th form, GDR - 147313.

563. SCHELLHORN, M.:
Wesentliche Prinzipien der Evolutionsbiologie. /Fundamental principles of evolution biology/
Biol. in der Sch., 34, 1985, No. 2/3, pp. 97-106.
Lit. 28.

Contemporary studies of evolution develop in two directions. Special evolution biology is concerned with explanation of phylogenesis of species. General evolution biology investigates driving aspects, complex of factors and general laws of evolutionary processes including also several philosophical aspects. In modern evolutionary theory it is necessary to employ logically connected principles like principle of heredity, principle of lawful relations between genotype and fenotype, principle of biogenesis, principle of breeding by parents, etc. Individual principles are analysed from historical aspect. Examples from biology are introduced.

didactics of biology, biology instruction, general biology, evolution, GDR - 147313.

564. SCHIEFER, H.:

Über den Unterricht zu Beginn des 11. Schuljahres /On the instruction at the beginning of the 11th year of school attendance/

Biol. in der Sch., 34, 1985, No. 7/8, pp.266-268.Lit.4.

Already at the beginning of biology instruction the author tries to develop pupils´ activity by means of dialogue method of instruction. A special attention is paid to the revival of the knowledge from basic school and to a purposeful developing of pupils´ activities.

didactics of biology, biology instruction, secondary school, 11th class, GDR - 147313.

565. ŠUHOVA, E.:

Der Evolutionsgedanke im Biologieunterricht der sowjetischen allgemeinbildenden Schule /The idea of evoluion in biology instruction in the Soviet secondary school of general education/

Biol. in der Sch., 34, 1985, No. 1, pp. 14-19. Lit. 1.

One of the pre-conditions of biology-instruction modernization is the stress on evolution. Because in 1981/82 new syllabi were introduced in Soviet schools, the contribution is very topical. The author analyses knowledge of evolution, included in 5th and 6th year botany, in the 6th and 7th year zoology, in the 8th year anatomy, physiology and hygiene, and in the 9th and 10th year general biology.

didactics of biology, biology instruction, general biology, USSR, teaching syllabi, 5th - 10th class, GDR - 147313.

566. **THOMSON, N. - STEWART, J.:**

Secondary school genetics instruction. Making problem solving explicit and meaningful

J. of Biol. Educ., 19, 1985, No. 1, pp. 53-62. Lit. 25, 7 fig., 6 tab.

Secondary school genetics is an important part of biology instruction, but it is difficult for pupils and therefore also for the teacher's strategy. The authors have analyzed the knowledge necessary for the understanding of genetics. They introduce algorythms necessary for the solving of genetic problems.

didactics of biology, biology instruction, genetics, secondary school, problem instruction, algorythms, Great Britain - 147313.

567. **WALSH, B.L.:**

Science in a technological society - a relevant curriculum for students in 1980s

The Austr. Sci. Teachers J., 31, 1985, No. 1, pp. 46-54. Lit. 9, 1 photo, 4 tab.

There is a crisis in science education today, because it got into conflict with the life in the scientific and technological society. Current courses of instruction do not consider relations between science and technology. The author brings an alternative curriculum, which could solve this problem of instruction modernization. It is necessary to change natural science curricula completely so that they agree with the contemporary state of technology and science. The suggestion is meant for secondary schools.

didactics of biology, biology instruction, science, technology, curriculum, secondary school, modernization, Australia - 147313.

12. 2. 5 Teacher's preparation for instruction in environmental control

568. HARNISCH, B.:
Abfall und Müll in unserer Schule /Litter and ashes in our school/
Unterr. Biol., 9, 1985, No. 106, pp. 24-27. Lit. 8, 4 fig., 1 worksheet.

The heap of litter rises. Also in schools. The producer of litter should therefore separate harmful things from useful ones and enable either their recycling or dispose of them. The author describes how her school composts green litter in the school garden. For other kinds of litter there are special containers. Problems of litter are discussed in instruction on secondary grade I /7th - 10th form/ in three instruction periods.

didactics of biology, biology instruction, envieonmental control, litter, recycling, compost, FRG - 147313.

13. 1 Verification of the results of biology instruction, revision lessons, intensification, systemization and structuralization of the subject-matter, surveys of the subject-matter

569. ALBAT, A.:

Wie kann der Lehrer das unterschiedliche Leistungsvermögen der Schüler in Klasse 5 berücksichtigen? /How can teacher respect different efficiency of the 5th form pupils?/

Biol. in der Sch., 34, 1985, No. 12, pp. 465-469.

One possibility how to increase pupils' efficiency is to take into account their experience and their personal relations towards nature. The author documents his conclusions by means of the analysis of the thematical unit "Birds" and of the subject-matter of botany. He brings examples of life experience and their attitude to the instruction period.

didactics of biology, biology instruction, assessment, basic school, 5th form, GDR - 147313.

570. Kak ispol'zovat' opyty, nabljudenija i samonabljudenija pri povtoreni učebnogo materiala /How to use experiments, observation and auto-observation at the revising of subject-matter/

Biol. v Šk., 59, 1985, No 2, pp.33 - 36. Lit. 1, 7 fig., 1 tab.

The editorial is from the series "To practical fulfilling of school reform" and wishes to show the method of active revision of subject- matter including tasks of experimental character. This method enables not only revision of older parts of subject-matter, but also their connection with new parts of subject-matter and using known facts in new situations.

didactics of biology, biology instruction, experiment, USSR - 147313.

571. LITSCHE, G. Üben, Üben, Üben .../Exercise, exercise, exercise.../

Biol. in der Sch., 34, 1985, No. 1, pp. 23-27. Lit. 7.

The author contemplates the question, what pieces of biological knowledge to keep in memory for a longer time. As the most important he considers the knowledge of the rule of law. It is also very important to build a system of memorized pieces of knowledge. And last but not least comes the exact use of biological terminology.

didactics of biology, biology instruction, fixing of knowledge, GDR - 147315.

13.2 Assessment of the results of biology instruction

572. CLOUGH, E.E. - WOOD-ROBINSON, C.:

How secondary students interpret instances of biological adaptation

J. of Biol. Educ., 19, 1985, No. 2, pp. 125-130. Lit. 17, 1 fig., 3 tab.

Understanding biological adaptation has been discussed with 84 students of the age from 12 to 16. The analysis of their answers shows that pupils of secondary schools find this part of biology difficult. There is a small progress from 12 to 14 years of age, but there is a remarkable progress of the 16 year old students. What are the possible consequences for the teacher? Formal knowledge is the result of formal instruction. An improvement of knowledge follows laboratory exercise. The authors demand improvement of the strategy of instruction, group instruction and discussion.

didactics of biology, biology instruction, general biology, research, knowledge, evolution, origin of species, secondary school, Great Britain - 147305.

573. HOMOLA, J.:

Ověřování nového modelu biologie ve III. ročníku gymnázia

/Verification of new model biology in 3rd form of secondary school of general education - the "gymnasium" type/

Přír. vědy ve Šk., 36, 1984-1985, No. 2, pp. 42-44. Lit. 9.

Information on the theory and hypothesis of research, on aims and tasks of research of the new model biology in 3rd class of gymnasium, and assessment of the progress and results of the experiment - these are the main themes of the article. The author characterizes teachers´ and pupils´ work, organization and control of instruction, assesses the new teaching syllabi, textbook and methodical handbook. Conclusions are drawn for new textbooks and methodical handbooks.

didactics of biology, biology instruction, secondary school of general education /gymnasium/, 3rd form, research, experiment, teaching syllabi, textbook, Czechoslovakia - 147315.

574. JACOBSON, W,J. - DORAN, R.L.:

How are our ninth-graders doing?

The Sci. Teacher, 52, 1985, No. 4, pp. 25-27.

During 1983 a specimen of 2 000 American secondary school students was investigated on the basis of the knowledge of natural science. Results are compared to those from 1970 and 1983. The biology results are better than physics results. In geology and cosmology, boys are better than girls. On the whole - improving of the girls' efficiency is demanded.

didactics of biology, biology instruction, knowledge, research, natural science, secondary school, USA - 147315.

575. KORMONDY, E.J.:

Science Education; the Challenge of the 80s

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 402-409. Lit. 12, 1 photo.

As the report of the American educational committee informs, in USA grows the average level. The level of education is compared to education in other countries. 23 million Americans are not qualified, 13 per cent of them are 17 years old. The average education on secondary school is lower than before 26 years. Causes of the education-level fall are analyzed, and suggestions for an improvement expressed.

didactics of biology, biology instruction, knowledge research, USA - 147315.

576. KOZLOVA, T.A.:

O znanijach i umenijach abiturientov Seĺskochozjajstvennoj akademii im. K.A. Timirjazeva, ekzamenovavsichsja po biologii v 1984g. /On the knowledge and skills of the graduates of K.A. Timirjazev agricultural academy, examined in biology in 1984/

Biol. v Šk., 58, 1985, No. 3, pp. 29-32.

Biology examination results from 1984 are spoken of. 1 500 students were examined in that year.

didactics of biology, biology instruction, research, knowledge, agriculture + high school, USSR - 147315.

577. KUKAN,Š. - ŠEDIVÁ, K.:

Osvojenie poznatkov o trávicej sústave u žiakov 7.Š a 8. ročníku ZDŠ /Acquiring knowledge of digestion system by pupils of 7th form of basic schools and of 8th form of basic 9year schools/

Přír. vědy ve Šk., 36, 1984-1985, No. 5, pp. 164-166. Lit. 5, 2 tab.

The authors analyze the results of didactical research of the selected instruction matter /human biology/ in 8th form of basic 9 year schools and in 7th form of basic schools proceeding by the new educational conception. The instruction matter of the research was the structure and function of digestion system. 7th form pupils have better results than 8th form pupils.

didactics of biology, biology instruction, research, knowledge, human biology, basic school, basic 9 year school, 7th class, 8th class, Czechoslovakia - 147315.

578. STEPANS, J.:

Biology in Elementary Schools: Children's Conceptions of "Life"

The Amer. Biol. Teacher, 47, 1985, No. 4, pp. 222-225. Lit. 11, 1 photo, 4 tab.

This article discusses the research of children's conception of life. It is investigated how a child learns to know his or her environment on the basis of own experience, textbooks and teachers. The author pays attention to the importance of the forming of basic notions, and shows the way to an improvement of the notion-forming process in elementary schools.

didactics of biology, biology instruction, research, notion + forming, elementary schools, USA - 147315.

579. GOLLE, B. - KOPPRASCH, G.:

Vorbereitung der schriftlichen Abschlussprüfung 1984/85 - Auswertung der schriftlichen Reifeprüfung 1983/84 und ihre Vorbereitung für 1984/85 /Preparation of written leaving examinations 1984/85, assessment of the written "maturity" leaving exams from 1983/84 and preparation for 1984/85/

Biol. in der Sch., 34, 1985, No. 1, pp. 8-13. Lit. 3.

The authors analyze written examinations from the aspect of the demands on pupils' efficiency. Further they assess the written examinations which showed a good preparation of students. Notes to preparation of 1984/85 exams close the article.

didactics of biology, biology instruction, research, knowledge, "maturity" leaving examination, written examination, GDR - 147315.

13.4 The outcome of biology competitions, and of the creative work in the youth organization, pupils´ projects in biology, students´ scientific and professional activity

580. Komárům zvoní hrana? /Does the bell toll for mosquitos?/ Věda a Tech. mládeži, 39, 1985, No. 19, p. 7. 5 fig.

Hana Krátká, 4th year student of the faculty of natural sciences, Charles University, was the fourth best in the competition of students. Her work dealt with biological fight against harmful insects - mosquitos. Tolypocladium sp. is described as an active agent against larvae of Culex pipiens.

didactics of biology, biology instruction, students´ scientific and professional activity, air pollution, Czechoslovakia - 147315.

581. MACHÁČKOVÁ, J.:

Biodetekce po Ostravsku /Biodetection Ostrava style/ Věda a Tech. mládeži, 39, 1985, No. 20, pp. 26-27. 5 fig.

Damages of plants by sulphur dioxide is the content of Jakub Zvolský´s work in students´ scientific and professional activity. Zvolský is a 3rd year student of secondary school of general education.

didactics of biology, biology instruction, students' scientific and professional activity, air pollution, Czechoslovakia - 147315.

14 The biology teacher, outstanding biology teachers

582. **KOPPE, U.:**

Als Neulehrer fing ich an ... /I also began as a young teacher .../

Biol. in der Sch., 34, 1985, No. 5, pp. 180 - 184.
Lit. 2.

The aim of the article is to offer help to younger teachers at school. The author remembers biology instruction before World War II, which she knew as a pupil. From 1952 she has been working as a teacher. What does she recommend to her young colleagues: 1. instruction must be interesting , 2. experiments are necessary, 3. discussion methods are very useful, 4.instruction must be connected with life, 5. pupils must be disciplined, 6. it is necessary to have good contacts with the prefect of the class, 7. it is advisable to visit instruction of other teachers.

didactics of biology, biology instruction, teacher + biology, GDR - 147305.

583. NITSCHMANN, J.:

Biologie als Lebensaufgabe /Biology as a task for life/

Biol. in der Sch., 34, 1985, No. 5, pp. 184-188.

The author describes the development of his interest in biology and of his activity as a university teacher. He has prepared a number of biology teachers. His practical recommendations for biology instruction: 1. to work with genuine objects, 2. to introduce a variety of organisms, 3. to enable knowledge of dialectic relation between structure and function, 4. to insert new, modern discoveries into instruction, 5. to show possibilities of biological theory applied in practice, 6. to stress ecology in instruction.

didactics of biology, biology instruction, teacher + biology, GDR - 147305.

14.2 Teacher training in normal, extramural, and postgraduate courses at pedagogical faculties and natural science faculties, diploma works

584. FREJLAK, S.:

Doskonalenie zawodowe nauczycieli biologii w Czechosłowacji /Further education of biology teachers in Czechoslovakia/

Biol. w. Szk., 38, 1985, No. 2, pp. 70-72.

The activities in three institutes are described: Pedagogical Research Institute, Research Institute for Technical and economic education, and Central Institute for Pedagogical Workers Education in Prague.

didactics of biology, biology instruction, research institute, Czechoslovakia - 147305

585. VOGEL, L.:

Eine echte Anleitung zum Handeln /A genuine direction to action/

Biol. in der Sch., 34, 1985, No. 5, p. 204.

A special course on "Microbiological practical training" was organized in Leipzig by Regional Pedagogical Institute. The course was aimed at acquiring of practical skills in microbiological technique. The course was also concerned with recent results and discoveries in microbiology.

didactics of biology, biology instruction, teacher + biology, further education of teachers, microbiology, GDR - 147305.

586. ZICHÁČEK, V.:

Příprava učitelů k nové koncepci vyuky biologie /Teacher preparation for the new conception of biology instruction/

Přír. vědy ve Šk., 36, 1984-1985, No. 9, p. 332.

Work of the department of biology of the Regional Pedagogical Institute at Olomouc is described. The

Institute is concerned with secondary schools. This contribution concentrates mainly on preparation of the new conception of biology instruction, on special courses organized for biology teachers in the region of northern Moravia.

didactics of biology, biology instruction, further education of teachers, modernization, education, Czechoslovakia - 147305.

14.3 Teacher and his public activity, his work in district pedagogical bodies, district subject-advisers, school inspectors, school inspection

587. PROKOPENKO, L.I. - KALAČEVA, L.I.:

Kak my izučajem i rasprostranajem peredovoj opyt učitelej biologii/The way of studies and spreading information on progressive experience of biology teachers/ Biol. v Šk., 59, 1985, No. 3, pp. 27-29 . 2 tab.

The article informs about the work of the Čerkas regional institute for further studies of teachers, especially the application of biology teachers experience. The institute has specialized work groups concerned with professional interests of biology teachers. They also organize visits of pedagogical workers to instruction periods led by outstanding teachers.

didactics of biology, biology instruction, teacher + biology, methodical body, further education, USSR -

147305.

14.5 Self-education of biology teachers

588. **FLANNERY,M.C.:**

Branching out

The Amer. Biol. Teacher, 47, 1985, No.4, pp. 246-248.

Lit. 43.

The author has been teaching for 14 years. Her pupils always want to know more than they find in textbooks. That is why she began to study didactics periodicals The American Biology Teacher, Scientific American, Science Teacher. She has found a lot of hints for her work and for improvement of her teaching practice. She shows how to use didactical periodicals.

didactics of biology, biology instruction, self-education, teacher + biology, periodicals, USA - 147305.

14.7 Meetings, conferences and seminars concerning biology, meeting of experts in didactics of biology

589. Botanika mládeži. Celostátní konference /State conference on Botany for the Youth/

Přír. vědy ve Šk., 36, 1984-1985, No. 7, pp. 243-257.

Questions of environment were on the programme of a conference held in Prague on November 19, 1984. This conference was organized by the pedagogical committee and committee for work with youth ČSBS at the Czechoslovak Academy of Science, in cooperation with State Pedagogical Publishing House and ČSVIS. The aprticipants discussed the quality, quantity, forms and methods of work with youth in botany in general education. The article brings information on individual contributions.

didactics of biology, biology instruction, conference, botany, youth, Czechoslovakia - 147301.

590. BREHME, S. - GEHLHAAR, K.H.:

XXI. Schulbiologentage - Erfurt /15. bis 18. Oktober 1984/ /XXIst Days of biology teachers in Erfurt, from 15th to 18th October, 1984/

Biol. in der Sch., 34, 1985, No 4, pp. 139-140

XXIst Days of school biology were organized by the section of school biology of the Biological society in GDR, in cooperation with Organization for nutrition of GDR and Regional institute for further studies of teachers. The theme was specified as "The aid of biology instruction in supporting a healthy life style". Activities were organized in work groups. There were visitors from abroad - Poland, USSR, Bulgaria, Czechoslovakia.

didactics of biology, biology instruction, conference, society, biology, GDR -147301.

591. CICHY, D.:

W trosce o ochrane środowiska - spotkanie ekspertów RWPG /Care for environmental control - meeting of experts of COMECON/

Biol. w. Szk., 38, 1985, No. 2, pp. 115-117

Since 1972, Poland has been taking part in research of COMECON, following common economic, organizational, legal and pedagogical aspects of environmental control. In Poland a meeting of COMECON experts was held. They were experts from Bulgaria, Czechoslovakia, GDR, Hungary, USSR, Jugoslavia and Finland. Information about the proceedings are given.

didactics of biology, biology instruction, conference, environment, COMECON, Poland - 147301.

592. GEHLHAAR, K.H.:

Wahlversammlung der Sektion Schulbiologie /Assembly of School Biology Section/

Biol. in der Sch., 34, 1985, No. 4, pp.141-142.

On October 15, 1984, general assembly of School Biology Section was held. The preceding days of School Biology were discussed and assessed and E. Haeckel Prize awarded. Discussion brought suggestions for further activity. New president and vicepresidents of the Section were elected. Prof. DrSc. I. Heinzel was elected president, Prof. H.W. Baer and Doz.DrSc. G. Brehme vicepresidents.

didactics of biology, biology instruction, conference, society, biology, GDR - 147301.

593. KOSZEWSKA, B.:

XXI dni szkolnej biologii w NRD /XXIst Days of School Biology in GDR/

Biol. w Szk., 38, 1985, No. 2, p. 118.

School Biology Days were held in Erfurt in October 1984. In the proceedings of School Biology Section 250 participants took part. There were visitors from Bulgaria, Czechoslovakia, USSR and Poland. The participation of Poland is described. The main theme of the programme was biology instruction and its contribution to health education.

didactics of biology, biology instruction, conference, society, biology, Poland - 147301.

594. KOUBA, L.:

Didacta ˚84

Učební pomůcky ve Šk. a Osv., 24, 1984-1985, No. 2, pp. 24-25. 6 photos.

Didacta ˚84 was held in Basle, Switzerland. Nine main sections of the exhibition are described. 700 exhibitors from 24 countries took part, among them Czechoslovakia, Bulgaria, Hungary, Poland and GDR. Novelties are introduced.

didactics of biology, biology instruction, Czechoslovakia - 147311.

595. VOESACK, L.:

11.Wissenschaftliche Jahrestagung der Biologiemethodiker der DDR /11th annual session of East German experts in biology didactics/

Biol. in der Sch., 34, 1985, No. 7/8, p. 280.

Session of experts in biology didactics, December 1984, was devoted to the problems of practice, research and instruction in the years 1986 - 1990. The article brings some details of the main contribution by Prof. Dietrich.

didactics of biology, biology instruction, conference, society, biology, GDR, 147301.

596. ZICHÁČEK, V.:

Dny didaktiky biologie v NDR /School Biology Days in GDR/

Přír. vědy ve Šk., 36, 1984-1985, No.8, p. 293.

The contribution brings information on School Biology Days held at Pedagogical High School in Erfurt in October 1984. The main theme was School Biology and its contribution to the development of a healthy way of living. Information is given on the proceedings and main lectures.

didactics of biology, biology instruction, conference, society, biology, GDR, Czechoslovakia - 147301.

14.9 Outstanding biology teachers - deaths, anniversaries

597. AKMAN, V.:

Urok Mira vedet veteran /Instruction period on Peace is led by a veteran/

Biol. v Šk., 58, 1985, No. 4, pp. 51-52. 1 photo.

An instruction period with the theme Peace was led by the veteran of Great Patriotic War, Ačil Kučkerovič. The question of peace and efforts towards peace was discussed. The teacher V. Akman himself took part in the War. His life, work and educational activities are mentioned.

didactics of biology, biology instruction, teacher + biology, USSR - 147305.

598. ARIFCHODŽAJEV, S.:

Veteran pedagogičeskogo truda /Veteran of educational work/

Biol. v Šk., 58, 1985, No. 5, p. 59. 1 photo.

The author remembers 40 years of educational work of the teacher J.B. Ikramov, 45th school in Tashkent. As a student he went to the Front, was awarded the Order of Red Star. After the War he became basic school teacher, studied chemistry and biology at a pedagogical institute and now teaches biology.

didactics of biology, biology instruction, teacher + biology, USSR - 147305.

599. Team of authors:

Pamjati Konstantina Nikolajeviča Blagosklonova /To the memory of Konstantin Blagosklonov/

Biol. v Šk., 58, 1985, No. 6, p. 72.

In September 1985 it was 75 years from the death of K.N. Blagosklonov. He graduated in biology at Moscow University, then worked as a university teacher of zoology /invertebrates/ at the biological faculty of Moscow Univeristy. He worked with young scientists, led biological Olympiades, was active in the field of nature conservation and environmental control.

didactics of biology, biology instruction, teacher + biology, university, anniversary, USSR - 147305.

600. GUSEJNOV, M.G.:

Slovo veterana /The word of a veteran/

Biol. v Šk., 59, 1985, No. 2, pp. 58-59.

The author has been secondary school biology teacher for 22 years. He strives after a highly educated youth, ideologically strong, able to continue in the work of preceding generations. He fought at Sevastopol in the Great Patriotic War. In the end he warns the teachers not to forget the education to the country defence in their educational work.

didactics of biology, biology instruction, teacher + biology, education to defence of the country, USSR - 147305.

601. JACHJAJEVA, M.I.- MUINOVA, E.M.:

50 let na nive narodnogo prosveščenija /50 years work for national education/

Biol. v Šk., 59, 1985, No. 3, pp. 44-45. 1 photo.

The contribution is devoted to 50th anniversary of J.B. Kajumov's educational work. Kajumov is the head of the general biology department in Ševčenko pedagogical institute in Tadzhikistan, has published many scientific studies in cytology and genetics, and many such studies has translated. As a teacher, he propagates progressive instruction methods.

didactics of biology, biology instruction, teacher + biology, pedagogical faculty, USSR - 147305.

602. JAVORSKAJA, K.A.:

Jeje prizvanie /Her talents/

Biol. v Šk., 58, 1985, No. 5, pp. 61-62.

The teacher L.I. Batalina leads pupils' groups of interest. They plant fruit trees and decoration trees, they have founded a school dendrarium.

didactics of biology, biology instruction, teacher + biology, interest groups, fruit growing, USSR - 147305.

603. K 100-letiju so dnja roždenija E.N. Pavlovskogo /To hundredth anniversary of E.N. Pavlovskij's birthday/
Biol. v Šk., 59, 1985, No. 1, pp. 23-24.

In 1984 it was hundred years from the birth of E.N. Pavlovskij, an outstanding soviet zoologist and parasitologist, member of Academy of Science of USSR, Hero of Socialist Work. His theoretical works are known at home and abroad, esp. in medicine and veterinary medicine. He studied the problems of tick encephalitis and arrived at serious conclusions.

didactics of biology, biology instruction, high school, zoology, parasitology, virus, anniversary, USSR - 147305.

604. NIKOLOV, G. - CVETKOV, T.:
S mnogo obič i pedagogičesko majstrovstvo /With great love and pedagogical mastery/
Biol. i Chim., 28, 1985, No. 4, pp. 59-61. 1 photo.

Life and work of the first biology teacher of the pedagogical institute in Warsaw, who strove for higher qualification of teachers.

didactics of biology, biology instruction, high school, further education of teachers, anniversary, Bulgaria - 147305.

605. PICKA, J.:

Nedožité pětašedesátiny Josefa Krále /Josef Král would be 65/

Živa, 33, 1985, No. 6, p. 220. 1 photo.

Josef Král was a zoologist with encyclopedical knowledge. His special branch of study were Alticidae. He was born in 1920 and died in 1944.

didactics of biology, biology instruction, teacher + zoology, anniversary, Czecholsovakia - 147305.

606. ŠAJMARDANOVA, M.Š.:

Uroki Kenesa Žilkibajeva /The lessons of Kenes Žilkibajev/

Biol. v Šk., 59, 1985, No. 1, pp. 50-51.

K. Žilkibajev has been biology teacher in Kasachstan for 27 years. He has an excellent relation to his pupils, teaches them how to develop a good relation to the collective of the class, and responsibility towards work. He also works in the group of young naturalists, in a nature reserve and in methodical bodies.

didactics of biology, biology instruction, teacher + biology, USSR - 147305.

607. SVIDERSKAJA, M.D.

Seĺskaja učiteĺnica /A village teacher/

Biol. v Šk., 58, 1985, No. 5, pp. 60-61. 1 photo.

22 years of pedagogical work of the secondary school teacher M.L. Vasiljeva, Leningrad region. She is successful in agricultural work propagation, her instruction has a high quality. She was awarded for her work.

didactics of biology, biology instruction, teacher + biology, USSR - 147305.

608. ZEJDA. J.:

Zoologický preparátor Josef Tesař /Zoological preparator Josef Tesař/

Živa, 33, 1985, No. 3, pp. 100-101. 2 photos.

Life-long occupation of Josef Tesař is preparation work. 25 years he has been working in Moravian museum in Brno. His work is described.

didactics of biology, biology instruction, zoology, taxidermal specimen, preparation, Czechoslovakia - 147305.

609. ZICHÁČEK, V.:

Příroda Jeseníků očima učitele Jaroslava Němce /Jeseníky landscape through the eyes of the teacher Jaroslav Němec/

Přír. vědy ve Šk., 36, 1984-1985, No. 5, p. 169.

The article remembers the work of the teacher J. Němec, worker of the biology department and eco-pedagogics of the Regional Pedagogical Institute in Olomouc.

He has been successfully working in nature conservation and has his chare in the protection of Jeseníky region.

didactics of biology, biology instruction, teacher + biology, nature conservation, Czechoslovakia - 147305.

610. ZICHÁČEK, V.:

Za profesorem Jiřím Slavíkem /In memoriam of Jiří Slavík/
Přír. vědy ve Šk., 16, 1984-1985, No. 9, p. 331. 1 photo.

Jiří Slavík died on December 5, 1984. 27 years he was teaching at secondary school /gymnasium/ in Havířov. His educational work, his merits in nature conservation and in the natural science committee in Brno are remembered.

didactics of biology, biology instruction, teacher + biology, secondary school of general education /gymnasium/, death, Czechoslovakia - 147305.

15 Articles containing information about scientific biology, suitable for biology instruction

611. GUILBOT, R. - SEYOT, F.:

Lópie: Office pour l'information écoentomologique
/Institute for ecoentomologic informations/
Biol. Geol., 85, 1985, No. 1, pp. 111-114. 3 fig.

The society organizes activities for schools, excursions and exhibitions. An excursion to Versailles is described.

biology, entomology, society, excursion, exhibition, France - 147357.

612. SLAVÍK, B.:

Experimentální zahrada biosystematického oddělení Botanického ústavu ČSAV v Průhonicích /Experimental garden of the biosystematic department of Botanical Institute ČSAV in Průhonice/

Živa, 33, 1985, No. 4, pp. 157-159. 3 photos.

The author shows possibilities of experimental garden in Průhonice for the study of plant taxons, their variability and evolution, for the study of individuals and populations in concrete localities.

biology, Czechoslovak Academy of Science /ČSAV/, botany, garden, system, Czechoslovakia - 147357.

613. SZEYKOWSKA, A.:

Kierunki badań naukowych zakładu fizjologii roślin UAM /Direction of scientific reasearch of the Institute of plant physiology/

Biol. w. Szk., 38, 1985, No. 3, pp. 181-183.

Adam Mickiewicz Institute of plant physiology in Poznań is concerned with didactics and science work coordinated by the Polish Academy of Science. Molecular bases of microorganic processes and of higher organisms, and physiological and genetic foundations of plant productivity are studied here. Results are described.

biology, high school, university, physiology + plant, research, Poland - 147357.

614. SPECTOR, B.S. - WHITE, Q.A.:

Teachers and Researchers: Potential Symbiont

The Amer. Biol. Teacher, 47, 1985, No. 2, pp. 92-93. 2 photos.

Symbiotic relationship between science teachers and researchers, interaction between teachers and scientists is discussed.

biology, high school, researcher, cooperation, USA - 147357.

615. WUSSEN, J.C.:

Science courses and social issues

The Austr. Sc. Teachers J., 31, 1985, No. 1, pp. 15-22. Lit. 11, 1 photo.

The article follows the development of the movement for scientific courses, which stress relations between science, technology and society. Content, aims and structure of the courses are suggested. They could be a great help for the science teachers.

Biology, science, technique, society, Australia - 147315.

616. **BEZOUŠKA, P.:**

Po stopách ořechů /To the origin of nuts/

Věda a Tech. mládeži, 39, 1985, No. 2, p. 21. 2 photos.

The author discusses the coconut palm /Cocos nucifera/ growing in tropical countries. Its origin is not known. Fossil cocos nuts have 3 cm in diameter and are from the Cainozoic era from the Northern Island of New Zealand. In India, coconut palm was grown already 1 000 years B.C.

botany, growing, plant, tropes, Czechoslovakia - 147355.

617. **BLAŽEK, M.:**

Introdukční možnosti Iris pumila /Introducing possibilities of Iris pumila/

Živa, 33, 1985, No. 4, pp. 138-140. 4 photos.

Growing of Irises in Průhonice is described. In Průhonice the problem of genofond is studied.

botany, growing, plant, Irises, Czechoslovakia - 147355.

618. **BLAŽKOVÁ, D.:**

Louky Průhonického parku a jeho okolí /Meadows of Průhonice Park and the surroundings/

Živa, 33, 1985, No. 4, pp. 126-127. 1 map.

There are many meadows in Průhonice Park, moist to wet, dry meadows and other types. The author describes them and calls for attention to the possibility of studying them.

biology, botany, meadow, park, Czechoslovakia - 147355.

619. BRILLOVÁ, D. - ŠUŤÁKOVÁ, G.:

Vírusy húb /Viruses of fungi/

Vesmír, 64, 1985, No. 7, pp. 383-385. 5 photos.

Mykoviruses, viruses of fungi are studied. The official term is "particles similar to viruses". For the first time the scientists met with them in 1962, when browning of champignons /Agaricus bisporus/ was noticed. It is a disease of virus origin, the same virus that had been found in cells of Penicillium and Aspergillus. Today we know viruses from 100 species of fungi from lower systematic groups.

biology, botany, virus, fungi, Czechoslovakia - 147355.

620. BRUNNER, U.:

Some antifungal properties of sorbic acid extracted from berries of rowan /Sorbus aucuparia/

J. of Biol. Educ., 19, 1985, No. 1, pp. 41-47. Lit. 20, 9 fig.

The use of sorbic acid has increased during the last 15 years. In the article rowan tree /Sorbus aucuparia L./ is described, its occurrence, production of syrup, antidiuretics and antiscorbic medicaments. Qualities are further studied as well as possibilities of using sorbic acid.

biology, botany, Great Britain - 147355.

621. Cibule jsou různé /There are various kinds of onions/
ABC mladých Tech. a přírodovědců, 29, 1984 - 1985, No.2, p. 19.

The grown species of onion are described - kitchen onion /Allium cepa/, winter onion /Allium fistulosum/, and Allium ascalonicum.

biology, botany, onion vegetables, growing, Czechoslovakia - 147355.

622. CUDLÍN, P. - KROPÁČEK, K.:
Semenáčky na míru /Seedlings to measure/
Věda a Tech. mládeži, 39, 1985, No. 21, pp. 4-5. 2 photos.

Growing of conifer seedlings in large-scale nurseries by means of modern methods is described. Seedlings are used for experimental afforestation of coal area dumps in the North Bohemian region.

biology, botany, conifer, growing, Czechoslovakia - 147355.

623. ČERVENKA, E.:
Horná hranica lesa na Slovensku /Upper borders of forest in Slovakia/
Vesmír, 64, 1985, No. 2, pp. 83-85. 7 photos.

Significance of forest in mountaineous areas is described. They regulate water and protect soil. The upper border of forest is solved from the water-economy and forest-protection aspect.

biology, botany, forest, forestry, mountains, Czechoslovakia - 147355.

624. DANGERFIELD, E.:

Wild food in Australia

The Austr. Sci. Teacher J., 31, 1985, No. 1, pp. 58-59. 2 photos.

Seeds of Araucaria bidoillii /Bunya Bunya Pine/ are edible. They must be boiled for 20 minutes - they taste like potatoes. More information about the tree is added.

biology, botany, conifers, seed, nutrition, Australia - 147355.

625. DOBRÝ, J.:

Zea diploperennis - objev století /Zea diploperennis - the discovery of the century/

Živa, 33, 1985, No. 6, pp. 204-205, 2 fig.

The article descibes the discovery of perennial maize Zea diploperennis in West Mexico mountain area in 1977. It is a discovery considered as one of the greatest of the century. The area of occurrence is protected. The maize is suitable for improving.

biology, botany, cereal, history, evolution, growing, Mexico, Czechoslovakia - 147355.

626. EMMELUTH, D.S. - BRUTT, D.E.:

Some Plant Hormone Investigations That Work

The Amer. Biol. Teacher, 47, 1985, No. 8, pp. 480-482.

Lit. 6, 5 fig.

Results of the investigation of some plant hormones and work with them are described.

biology, botany, physiology : plant, growth substance, experiment, USA - 147355.

627. FEDERER, Z.:

V domovině smrku Brewerova /In the country of Brewer spruce/

Živa, 33, 1985, No. 2, pp. 58-60.

Brewer spruce /Picea breweriana/ has its home in the northwest of USA. The author describes the locality of its occurrence. It is on the border between Oregon and California, in the National Park Kalmiopsis Wilderness. The spruce is a very decorative tree.

biology, botany, conifer, USA, Czechoslovakia - 147355.

628. GREGORCZYK, A.:

Gospodarka wodna roślin w ujeciu termodynamicznym /Water economy of plants in thermodynamic conception/

Biol. w. Szk., 38, 1985, No. 3, pp. 144-146. Lit. 3, 2 fig.

Water economy in plants in thermodynamic conception is discussed. New discoveries on the significance of of water in plant life are introduced.

biology, physiology + plant, water, thermodynamics, Poland - 147355.

629. HIECKE, K.:

Průhonice a rododendrony /Průhonice Park and rhododendrons/

Živa, 33, 1985, No. 4, pp. 131-134. 2 photos, 1 fig., 1 map.

Rhododendrons in Průhonice botanical garden are described, their sorts, growing technology, improving.

biology, botany, decorative gardening, dendrology, Czechoslovakia, 147355.

630. HILL, R.J. - STEUCEK, G.L.:

Photosynthesis II. An Assay for Herbicide Resistance in Weeds

The Amer. Biol. Teacher, 47, 1985, No. 2, pp. 99-102. Lit. 10, 3 fig.

In the last years, the environment is filled with a great amount of chemicals which are dangerous also for man and have mutagenous effects. It is an artificial selective pressure in the environment. An index of physical and chemical mutagens in biosphere has been worked out. Plants are either tolerant or resistent towards these substances. Verification of resistence against them is described.

biology, botany, culturocenosis, experiment, pesticide, Czechoslovakia - 147355.

631. JANSSEN, W.:

Morphologie /Morphology/

Unterr. Biol., 9, 1985, No. 101, pp. 2 - 10. Lit. 32, 14 fig.

Analytical descriptive progress of systematics and morphology is usual also with modern methods of biological studies. The author works out the history of morphology as a scientific branch, introduces basic morphologic types of organisms, principles of morphogenesis and metamorphosis and homology of organs.

biology, morphology + plant, morphology + animal, metamorphosis, ethology, FRG - 147361.

632. KHOLOVÁ,H.:

Výzkum zelených souputníků člověka /Investigation of green companions of man/

ABC mladých Tech. a přírodovědců, 29, 1983-1984, No. 15, p.5. 2 photos.

The research of weeds in Průhonice Park is described and the necessity to study them is stressed. Some species of weeds are becoming rare and some are even protected.

biology, botany, culturocenosis, research, Czechoslovakia, 147355.

633. KOVANDA, M. - CHALLICE, J.S.:

Jeřáby a jejich flavonoidy /Rowan trees and their flavonoids/

Živa, 33, 1985, No. 4, pp. 166-168, 1 fig., 3 tab.

We know today about 200 species of rowan trees. They grow mainly in mild climate. Genus Sorbus has 5 groups which differ in leafshape, in morphology of flowers, in biology of flowers, they either contain, or do not contain flavonoids. This fact helps to identify the species.

biology, botany, biochemistry, Czechoslovakia - 147355.

634. KOZLOV, L.G.:

Lug kak biogenosenoz, jego produktivnost i narodnochozjajstvennoje značenije /Meadow as biocenosis, its productivity and significance for national economy/

Biol. v Šk., 29, 1985, No. 3, pp. 9-16. Lit. 14, 1 tab.

In many regions of USSR, meadows are an important fodder basis for domestic animals. Meadows yield yearly one quarter or almost one third of fodder. It is therefore important to use meadows rationally and increase their productivity. It is also necessary to speak about meadows in biology instruction.

biology, botany, biocenosis, meadow, USSR - 147355.

635. KUNZE, H.:

Zur Morphologie der Angiospermen /To the morphology of Angiospermae/

Unterr. Biol., 9, 1985, No. 101, pp. 44-46. Lit. 7, 2 worksheets.

The author works out materials for the thematical unit Evolution on secondary grade II. Comparative morphology has brought much information for reconstruction of phylogenetic developmental lines. Using criteria of homology enables conclusions concerning the progress of development and statements on phylogenetic lines.

biology, botany, phylogenesis, plant, FRG - 147355.

636. LAŠTŮVKA, Z.:

Rostlina jako naprogramovaný automat /Plant as a programmed automatic machine/

Živa, 33, 1985, No. 4, pp. 162-163.

The author describes cybernetics as one of highly important methodological approach to analysis of biological processes. According to NEČAS, cell is a programmed automatic machine. However, today we know more about animal cells than about plant cells.

biology, botany, zoology, cell, evolution, Czechoslovakia - 147355.

637. LIŠKA, J.:

Průhonický park a lišejníky /Průhonice Park and lichens/
Živa, 33, 1985, No. 4, pp. 140-141. 3 photos.

Lichens are indicators of air pollution. They react very sensitively to sulphur dioxide in air. We can find many species of lichen in Průhonice Park. Today we know more than 100 species. Individual lichen species of Průhonice Park are described.

biology, botany, lichens, air pollution, lichenology, Czechoslovakia - 147355.

638. MACHOVÁ, A.:

Původ řezu dubu letního instalovaného v prostorách přírodovědecké fakulty Karlovy univerzity /The origin of the cutting of summer oak installed on the premises of natural science faculty, Charles University/
Živa, 33, 1985, No. 4, pp. 197-198. 2 photos.

Towards the end of the last century there remained only several trees from 300 old oaks near the Moravian town Bojkovice. The last three were called the noon oak, the weeping oak, the great oak. The life of the great one is described. It was alive to the year 1922 when a lightning killed it. From this tree is the cutting exhibited on the premises of natural science faculty in Prague. The other cutting is in the National Museum in Prague and another one in Dendrological museum of Brno.

biology, botany, dendrology, Czechoslovakia - 147355.

639. MARTENSEN, H.O.:

Pflenzen wehren sich /Plants defend themselves/
Unterr. Biol., 9, 1985, No. 101, pp. 14-18. Lit. 10,
2 fig., 3 worksheets.

Plant degence has various ways. They defend themselves mechanically by means of thorns. In 3 instruction periods defence of some plants is discussed, the problem of thorns and other defence mechanisms of plants are explained. Tables enable identification of defence mechanisms in worksheets.

biology, botany, morphology + plant, protection + plant, Czechoslovakia - 147355.

640. MICHALEVSKAJA, O.B.:

Kak obespečivajetsja celostnost rastitelnogo organizma
/How the integrity of plant organism is secured/
Biol. v Šk., 59, 1985, No. 2, pp. 48-51. Lit. 2.

The problem is connected with a theme from 5th form botany - Plant, an integral organism. The material of the article is to be used for revision and generalizing of knowledge about plants as integrated organisms.

biology, botany, didactics of biology, basic school, 5th form, integrity + plant, USSR - 147355.

641. NOACK, W.:

Woher kommen unsere Zimmerpflanzen /Where do our room plants come from/

Unterr. Biol., 9, 1985, No. 103, pp. 14-17. Lit. 4, 2 fig.

Tropical rain-forest is very far from here, yet quite many plants from there are grown as room plants. The pupils learn to know some of them. The author suggests a visit to a greenhouse in botanical garden with tropical plants. The pupils get the feeling of being in a tropical rain-forest and can see some of the species of that region.

biology, didactics of biology, botany, room plant, greenhouse, excursion, FRG - 147355.

642. PEKÁRKOVÁ, I.:

Monstròzní květy bledule jarní /Monstrous blossoms of snow-flake/

Živa, 33, 1985, No. 1, pp. 15-16, 2 fig., 1 tab.

The author describes monstrous blossoms of snow-flake from the locality of the valley Říčky in Orlické hory mountains. Mutagen influencing the occurrence of monstrous blossoms has not been found yet.

biology, botany, lilies, mutation, Czechoslovakia - 147355.

643. PODSTOLSKI, A.:

Fotosynteza /Photosynthesis/

Biol. w. Szk., 38,1985, No. 3, pp. 127-138. Lit. 5, 5 fig.

The article is focused on the light phase of photosynthesis. Information is taken from the latest physiological literature. It is an interesting theme, but difficult for both teachers and pupils. The light phase is the most difficult.

biology, botany, physiology + plant, photosynthesis, Poland - 147355.

644. Pokus o záchranu největšího květu světa /An attempt to save the biggest blossom of the world/

ABC mladých Tech. a přírodovédců, 29, 1984-1985, No. 24, pp. 24-25. 3 photos.

The biggest blossom of the world has the tropical plant Rafflesia arnoldi, discovered in May 20, 1818 by Thomas Stanford Raffles and studied by the physician Joseph Arnold. It is a parasite of the wildly growing vine Tetrasticum lanceolarum. In 1981 an experiment was made to grow Rafflesia arnoldi in the botanical garden in Singapore.

biology, botany, parasitism, Czechoslovakia - 147355.

645. RUNKOVIČ, G.:

Fantastické výtvory našej liany /Fantastic creations of our liana/

Živa, 33, 1985, No. 4, pp. 164-165. 4 photos, 2 tab.

An ivy, Hedera helix, growing in Brno in front of the Janáček theatre, is described. Its origin is mentioned, trees on which it grows, examples of our localities and age of some ivies /200 years, their trunk 30 - 40 cm broad/.

biology, botany, epiphitum, Czechoslovakia - 147355

646. RYCHTER, A.:

Oddychanie roślin /Plant breathing/

Biol. w. Szk., 38, 1985, No. 3, pp. 138-143.

Oxygen is essential for the life of multicellular organisms, and also for higher plants. It is necessary for the process of burning of parts of nutrition, which provide metabolic energy. Burning under low temperatures is called breathing, which happens in mitochondria. In main lines the same happens in plants and animals. Mitochondriae are described.

biology, botany, physiology + plant, cell, breathing, Poland - 147355.

647. SCHIMPF, D.J. - FLINT, S.D.:

Light Germination: Alternatives in Lamps. Filters and Seeds

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 410-411. Lit. 1, 1 fig.

Relation of light to germination, awakening or hindering of germination in light of different wave length. Influence of light of different wave length is demonstrated on the germination of lettuce seeds /Lactuca sativa/ and other species like Paulownia tomentose, Phacelia tanacetifolia, and others. The results of experiments are surprising.

biology, botany, physiology + plant, seed, phase of growth, light, USA - 147355.

648. SLAVÍK, B.:

Síťové mapování v botanice /Net mapping in botany/ Živa, 33, 1985, No. 6, pp. 210-213. 6 fig.

Net mapping in botany is today very important, esp. for nature conservation and salvation works. It is also suitable for preparing inventory of plants. It can be used in secondary school work on the grounds.

biology, biology instruction, didactics of biology, recording + phytocenosis, work on the grounds, Czechoslovakia - 147355.

649. STENZEL, A.:

Kakao und Schokolade /Cocoa and Chocolate/ Unterr. Biol., 9, 1985, No. 103, pp. 18-20. Lit. 6, 3 fig.

Instruction about cocoa and chocolate for orientation grade /5th - 6th forms/ is worked out. Cocoa tree comes from South America and today it is grown in all tropical countries. The author follows the structure of cocoa beans and chocolate production. Towards the end of the instruction period, pupils make chocolate from cocoa.

biology, botany, didactics of biology, biology instruction, growing + plant, the tropics, FRG - 147355.

650. ENGLISH, J. - SIMPSON, J.:

Przygotowenia zwierzat do zimy /Animal adaptation to winter/

Biol. w. Szk., 38, 1965, No. 1, pp. 34-38. 1 riddle, 19 fig.

The article is a translation from fragments of Canadian workbooks for biological exercises which concern organism adaptation to autumn and winter. All tasks demand individual work in the fields + observation and experiment. Etnological problems and demands of organism are described, hibernation, animal trail and reading animal trail,

biology, zoology, physiology + animal, adaptation, temperature, Poland - 147357.

651. FLANNERY, M.C.:

Bitten by the Insect Bug

The Amer. Biol. Teacher, 47, 1985, No. 8, pp. 490-492. Lit. 8, 1 fig.

Problems of contemporary entomology and knowledge of insect at school are spoken of. For man it is very important to know insects. The author recommends improving of the studies in schools, laboratories and in nature.

biology, zoology, entomology, insect, USA - 147357.

652. CHMURZYŃSKI, J. A.:

Miejsce etologii w naukach przyrodniczych /The place of ethology in natural sciences/

Biol. w Szk., 38, 1985, No. 1, pp. 4-15. Lit. 14, 5 fig.

Ethology becomes a popular science. It is read at universities, in radio and TV, we can read about it in books of science, it is taught in schools of general education. Its methods, history and development, the work of outstanding ethologists are described.

biology, zoology, ethology, natural science, Poland - 147357.

653. JANSSEN, W.:

Formenvielfält: Vogelschnäbel und Vogelfüsse /Bird variety: bird bills and bird legs/

Unterr. Biol., 9, 1985, No. 101, pp.36-40. Lit.4, 2 worksheets.

Preparation for instruction on secondary grade I: Birds /8 600 species/ are the most numerous group of land animals. Birds are adapted to environment and nutrition - as pupils can see on various types of legs and bills. Pupils can do morphological and ecological observations on pictures of birds.

didactics of biology, biology instruction, biology, zoology, adaptation, birds, FRG - 147357.

654. JANSSEN, W. - FINGER, S.:

Morphologisches Tierpuzzle /Morphological Animal Puzzle/ Unterr. Biol., 9, 1985, No. 101, pp. 11-13. 13 fig.

Directions for use in biology instruction and for a play in 1st form. The puzzle leads children to understand morphological structures. In pictures they are to find distinctive marks which are then shown them on a taxidermal specimen. In this way pupils are prepared for exact observation and comparing.

biology, biology instruction, didactics of biology, 1st form, basic school, comparison, birds, morphology, FRG - 147357.

655. JANSSEN, W.:

Steppentiere der Kontinente: Körpergestalt und Umwelt

/Steppe animals of the continents/ body shape and environment/

Unter. Biol., 9, 1985, No. 101, pp. 41-43. Lit. 2, 1 worksheet.

Directions for use in biology instruction on secondary grade I /7th - 8th forms/ with the theme: steppe animals of the continents, their body shape and adaptation of body to environment - to the life in the steppe. We can see that there are equalities in animals of different continents - equal bodies, which are the result of the adaptation to environment. These marks are called convergent marks.

biology, zoology, didactics of biology, biology instruction, fauna, plant land formation, FRG - 147357.

656. ORACZEWSKI, J.:

Choroby i szkodniki roślin /Plant diseases and pests/

Biol. w Szk., 38, 1985, No. 5, pp. 285-292. 1 tab.

This is a school programme of plant protection before diseases and pests. Pupils should know the most important plant diseases and pests, modern chemical means, the forming of suitable conditions for plants. They learn this when they work in school garden throughout the whole year.

botany, biology, zoology, plant + pest, plant + disease, conservation + plant, conservation + animal, school grounds, Poland - 147355.

657. KHOLOVÁ, H.:

Severská psí rodina /North dog family/

ABC mladych Tech. a prírodovédcû, 29,1984-1985, No.15, p. 6. 3 photos, 8 fig.

Dog originated from wolf. Today there exist many races of dogs. Races of north dogs are discussed. The theme is suitable for 6th form of basic school.

biology, zoology, mammals, dog, Czechoslovakia - 147357.

658. KLEMBARA, J.:

Ako vznikli plazi? /The origin of reptiles/

Vesmír, 64, 1985, No. 3, pp. 150-151. 5 fig.

Reproduction of reptiles is independent on water environment because the egg is covered with foetus membrane /amnion/. Eggs are laid on the land /the same happens with birds' eggs and with eggborn mammals/. These vertebrates have a developed amnion - hence their name Amniota, contrary to Anamniota. The oldest species of reptiles is said to be Hylonomus lyelli Dawson 1860. The oldest reptiles differ from phylogenetically relative group of Palaeozoic amphibians Anthracosauria - the origin of reptiles is not yet exactly known. The subject is suitable for secondary schools of general education.

biology, zoology, vertebrates, reptiles, phylogenesis, Czechoslovakia - 147357.

659. **MEYER, G.:**

Foraminiferen zeigen eine stetige Entwicklung /Foraminifera show a constant development/

Unterr. Biol., 9, 1985, No. 105, pp. 37-41. Lit. 5.

The author suggests a suitable theme for a written work in 12th form of secondary schools, secondary grade II. The shells of Foraminifera are durable - like fossils. They are the main part of writing chalk. Rhizopoda and Foraminifera and their biology and way of life are described.

biology, didactics of biology, biology instruction, protozoa, evolution, secondary school, FRG - 147357.

660. **VESELOVSKÝ, Z.:**

Jak zvířata komunikují /How do animals communicate?/

Vesmír, 64, 1985, No. 9, pp. 523-526. 3 photos, 2 fig.

Social behaviour of animals and their communicative signals is spoken about. There are acoustic, chemical and other communicative signals, signals among the same species, among different species, scent signalization of mammals, sigbalization by means of weak electric discharges, optical communication. The theme is suitable for basic school and secondary school education.

biology, zoology, ethology, communication, animal, social behaviour, Czechoslovakia - 147357.

15.3 Human biology

661. HAJNIŠ, K.:

Poznatky moderní antropologie I /Discoveries in modern anthropology/

ABC mladých Tech. a přírodovědců, 29, 1984-1985, No. 19, pp. 28-29. 1 tab., 2 fig.

Anthropology as an extensive science is today interested in everday life. The author introduces changes in children's growth and development in the recent time. Results have a lot to say to physicians and teachers.

biology, human biology, anthropology + child, growth, development, Czechoslovakia - 147357.

662. HAJNIŠ, K.:

Poznatky moderní antropologie II /Discoveries in modern anthropology/

ABC mladých Tech. a prírodovedců, 29, 1984-1985, No. 21, pp. 28-29. 4 photos.

Data of anthropology serve today to workers in many branches. Information and numbers about normal children and about those suffering from serious diseases are introduced. Also results of head measurings and kefalometric signs, retardation, cranioektomy and inborn defects of development are introduced.

biology, child biology, anthropology, research, craniology, Czechoslovakia - 147457.

15.4 General biology, genetics, macromolecular biology, biochemistry, biophysics, bionomics

663. FLANNERY, M.C.:

Looking at the Cell again

The Amer. Biol. Teacher, 47, 1985, No. 7, pp. 434-436.

Biology of recent years has won a more precise picture of cell and its function. Scientists have discovered new cellular structures and new abilities of the cell. Novelties in cytology sutitable for school biology are described.

biology, general biology, cytology, cell, biology instruction, USA - 147361.

15.4.1 Ecology

664. ADAMS, C.E. - CHARLES, CH. - GREENE, J. - SWAN, M.:

New Designs in Conservation /Ecology Education/

The Amer. Biol. Teacher, 47, 1985, No. 8, pp. 463-469 . Lit. 8, 1 tab.

Some branches of science, which belong to school instruction, are not connected with the problems of contemporary society. There is a disproportion in what science says and what society needs. Teaching syllabi should introduce also the needs of future time, problems of environment, social sources and everything pupils and students need for their lives. The author considers environment science, conservation and ecology synonymous subjects. He informs on new teaching syllabi projects for American schools and describes them /Project Learning Tree, Project WILD, The Class Project/.

biology, biology instruction, environmental control, ecology, teaching syllabi, USA - 147362.

665. NOWAK, L.:

Proces sukcesji ekosystemów. Konspekt lekcji w klassie VIII /Process of ecosystem succession. Conspectus of an instruction period in 8th form/

Biol. w. Szk., 38, 1985, No. 5, pp. 306-309. 2 crossword puzzles.

The theme "We learn to know the process of succession of ecosystems for 8th form of basic school is worked out. It is a theme called "Ecology and environmental control".

biology, didactics of biology, ecology, ecosystem, succession, 8th class, basic school, environmental control, Poland - 147362.

15.8 Outstanding scientists, anniversaries, deaths, outstanding experts in didactics of biology

666. JUNGCK, J.R.:

Mendel, Mendeleev and Me: Teaching´s Impact Upon Research

The Amer. Biol. Teacher, 47, 1985, No. 4, pp. 197-201.

Biology teacher informs his pupils about scientific research and the merits of biologists. The author, however, is not satisfied with the way it is done: it is either a very brief information, or ignoring. He believes that the teacher can use biologists' work results to education towards scientific abilities. For instance Mendel had outstanding teachers and the impact of this influence on Mendel was enormous. Franz Unger was evolutionist and therefore attacked by the Catholic Church. Mendel himself was an experienced and successful teacher and used an outstanding methodology. Similarly the life of Mendeleev is discussed and his outstanding teachers are mentioned.

biology, genetics, chemistry, R, Mendel. Mendeleev, didactics of biology, USA - 147357.

667. MARCINAK. W.:

Pamięci Waleriana Betkowskego 1889 - 1964 /In memoriam of Walerian Betkowski 1889 -1964/
Biol. w. Szk., 38, No. 5, pp. 315-316.

Walerian Betkovski occupied himself with didactics of biology, was teacher of biology and stressed nature conservation. His biography and publications /70 articles on biology didactics and biology, a botany handbook for adults/ are spoken of.

biology, didactics of biology, nature conservation, botany, Poland - 147357.

18. Scientific articles concerning technique and economics related to biology, biotechnology

668. DIMKOV, R.:

Biotechnologijata i srednoto obrazovanie /Biotechnology and secondary education/

Biol. i Chim., 28, 1985, No. 1, pp. 9-11.

Biotechnology today is a part of scientific and technical revolution. It is especially typical of the end of 20th century and for 21st century. The author speaks about the role of school in this. A special preparation for young people is necessary, new professions are available - but it all demands also changes in university preparation of teachers.

biology, biotechnology, secondary general education, teacher education, Bulgaria - 147149

669. VLACHOV, S.:

Biotechnologijata - strategičesko napravlenie na naukata /Biotechnology - a strategic course of science/

Biol. i Chim., 28, 1985, No. 2, pp. 9-14.

Today the interest in biotechnology is connected with the scientific and technical revolution. New industrialbranches originate, economics intensifies.

From 1984- 1985, a new course of study has been introduced at the faculty of biology, University of Sophia - biotechnology for preparation of highly qualified specialists. New scientific branch, its content and significance for socialist society is described.

biology, biotechnology, high school, univeristy, subject of instruction, Bulgaria - 147371.

6.8.1.1

670. POŁOMSKA, D.:

Nauczanie wychowajace w szkole /Educational instruction at school/

Biol. w Szk., 38, 1985, No. 5., pp. 277-282. Lit. 13. 1 tab.

Document of the main course and tasks in education of children and youth is discussed. The starting point is inventory of educational aims and their categories. Results of conferences on these problems are summarized. It is an important element of school work, a preparation for life in scientific society.

didactics of biology, biology instruction, educational care, communist education, Poland - 147313.

671. ŠABALINA, J.A.:

Kak ja ispolsuju na urokach biologii material is istorii Velikoj otečestvennoj vojny /How I use material from the history of the Great Patriotic War in biology instruction/

Biol. w Šk., 59, 1985, No. 2, pp. 29-32.

The author is a secondary school teacher. She writes about the way she uses extracts from literary works, newspaper articles and memories of veterans on Great Patriotic War in biology instruction. She speaks about more than 20 thematical units and about the problems she introduces. It is a significant contribution to patriotic education. It is necessary, the author reminds, to use this strategy systematically, not only on the occasion of anniversaries.

didactics of biology, biology instruction, education towards aptriotism, USSR - 147317.

6.8.4

672. FILIPŠUK, L.A.:

O roli trudovogo vospitanija /About the role of labour education/

Biol. v Šk., 59, 1985, No. 3,pp. 41-43.

The author selected main ideas from A.S. Makarenko´s book: Family education of children. Education towards labour. The extracts represent Makarenko´s fundamental opinions on the importance of work in man´s life, on the necessity to provoke correct labour habits. Some extracts deal with education towards collectivism, and with parents´ and teachers´ duties.

didactics of biology, biology instruction, work education, USSR - 147317.

673. ISMAGAMETOVA, M.S.:

Trudovoje vospitanije školnikov - naše obščeje dělo

/Work education of pupils - our common task/

Biol. v. Šk., 59, 1985, No. 2, pp. 60-65.

Experience from first year of the education reform shows that schools with possibilities of cooperation with industrial enterprises, farms, research institutes and other enterprises, reach good results. Communist Party organs help realize cooperation between schools and enterprises, observe labour education and professional orientation of pupils. A fundamental condition for successful fulfilling of the reform is to equip schools with workshops and laboratories.

didactics of biology, biology instruction, labour education, professional orientation, USSR - 147317.

674. SMOLIN, I.I.:

Trudovaja zakalka učachčichsja našej školy /Preparation of our pupils for labour/

Biol. v Šk., 59, 1985, No. 3, pp. 57-61. 1 photo.

These are experiences of a school, which has conditions for fulfilling the demands of systematic labour education and education to professional orientation. In the cooperation with the cooperative farm, the school helps to realize the nutrition programme of USSR. An experimental plot of land provided by pedagogical institute increases pupils´ knowledge of biology and agriculture. Results of this can be seen when graduates of these schools enter practice.

didactics of biology, biology instruction, labour education, secondary school, USSR - 147313.

675. Vospityvať truženikov /To educate eager workers/
Biol. v. Šk., 59, 1985, No. 1, pp. 3-7.

In the period of scientific and technical revolution an important school reform is realized. This reform presupposes that the changes in education will add to forming qualities of a very well prepared generation. A wide field of activity is found by biology teachers in looking for new ways to improve experimental work on school grounds, forests and at pupils´ voluntary work.

didactics of biology, biology instruction, labour education, USSR -147317.

6.8.5

676. TRAJTAK, D.I. - POLJAKOV, V.A.:
Ob usilenii politechničeskoj napravlennosti obučenija biologii /Strengthening of polytechnical direction in biology instruction/
Biol. v šk., 59, 1985, No. 1, pp. 31-35. Lit. 6.

The reform of secondary general and technical schools states as one of the main tasks strenthening of the polytechnical principle of education. Attention must be paid to practical and laboratory exercise, to technological application of physics, chemistry, biology, to labour education and professional preparation. In biology it is necessary to give pupils the knowledge of laws of vegetable and animal production, modern microbiology, nature conservation.

didactics of biology, biology instruction, polytechnical education, USSR - 147317.

6.8.7

677. TICHONOVA, N.J.:

V.I. Lenin i problemy ochrany prirody /V.I.Lenin and problems of nature conservation/

Biol. v Šk., 59, 1985, No. 2, pp. 9-14. Lit. 13.

Marx and Engels analyzed the thoughtless and brutal attitude of capitalism towards nature, and explained that only socialism on the basis of deep changes in economy, management and morals can remove the dangers of environmental damage.

Lenin was active in the field of nature conservation. He urged important document to form the basis of the whole system of nature conservation in USSR.

didactics of biology, biology instruction, education, nature conservation, USSR - 147317.

678. VOROBJEV, V.I.:

O kulture pitanija /About the culture of nutrition/
Biol. v Šk., 59, 1985, No. 1, pp. 17-23. 4 tab.

The author dicusses questions of nutrition from various aspects. By culture he means rationality and regularity. He points to the importance of metabolism in child's age, to the diseases as consequences of incorrect nutrition which - in industrial countries - leads to obesity. Finally the author recommends daily doses of food, organization of meals in school dining rooms, which is especially important for younger pupils.

didactics of biology, biology instruction, nutrition,
USSR - 147317.

6.9

679. LICHOLAT, T.V.:

Perspektivy primenenija reguljatorov rosta rastenij v opytničeskoj rabote učaščichsja /Perspectives of using plant growth regulators in experimental pupils' work/
Bio. v Šk., 59, 1985, No. 1, pp. 65-71. 3 fig., 3 tab.

In connection witn the demands of educational reform to increase educational level and professional preparation, it is also stressed that experimental and practical activity must be increased through activization of mental and practical activity. In school experiments it is recommended to use plant growth regulators. Directions for work progress with various variants of experiment are included. It is fundamental to remember the interdisciplinary relations between biology and labour education.

didactics of biology, biology instruction, professional orientation, USSR - 147317.

680. KOHLMAN, J.:

Zebranie zespołu metodycznego dla nauczyciel szkoł ponadpodstawowych wojwodstwa zielonogórskiego /Meeting of the methodical group of higher schools of Zelena Gora district/

Biol. w. Szk., 38, 1985, No. 5, pp. 314 - 315.

The participants of the meeting of secondary school teachers were informed about the equipment for analysis, about the optical set of physics instruction, about microscopes for biology instruction, and about decorative bushes for school grounds.

didactics of biology, biology instruction, means of instruction, methodical association, Poland - 147311.

10.7.3

681. ŠORINA, N.I.:

K ispolzovaniju tablic "Vegetativnyje organy rastenij"

/To the tables "Vegetative organs of plants/

Biol. v Šk., 59, 1985, No. 2, pp. 38-46. Lit. 1, 4 fig.

The author comments on the content and way of using tables /No.4-7/ in instruction. Tables concern themes: Roots. Plant - a complex organism. The tables are: Types of root system /No. 4/, Root systems and conditions of environment /No.5/, Root and its zones. Structure of young root /No.6/ and Metamorphoses of root /No.7/.

didactics of biology, biology instruction, means of instruction, botany, figure, USSR - 147311.

10.7.6

682. PRAVDIVAJA, Je.F.:

Primenenije trafaretov - odin iz sposobov aktivizacii poznavatelnoj dejatelnosti školnikov /Using of patterns as one of the ways of activization of pupils´ cognition activity/

Biol. v Šk., 59, 1985, No. 2, pp. 46-47. Lit. 2, 1 fig.

For the instruction of "The origin of man" certain patterns are available for use. The author has prepared them herself. They are put on blackboard and circumdrawn with chalk. They illustrate for instance the change of shape and size of cranium during its development. She instroduces methodical progress which is suitable especially for activization of pupils /looking at pictures in textbooks is slow/.

didactics of biology, biology instruction, means of instruction, drawing, USSR - 147311.

10.8.5

683. FLIG, S.A.:

Ob ispolzovanii diktantov pri obučenii školnikov botanike i zoologii /Using dictations in botany and zoology instruction/

Biol. v Šk., 59, 1985, No. 1, pp. 31 - 37.

This article is concerned with solving of questions for control and classification. Various forms of examinations were tried at 21st secondary school of Odessa and the results were discussed. One of the possible forms of examinations are dictations, which may be introduced in various phases of the instruction period. Dictation texts include notions, comparing aspects, qualities of organisms - all in agreement with the demands. Answers are written in the exercise books. The are immediately analyzed. Dictation lasts 10-15 minutes and includes 8-10 questions. There are 3 types of dictations used for this purpose: pupils have to fill in eliminated words, answer questions and name organisms described in the dictation. Examples are added.

didactics of biology, biology instruction, examination, instruction + diagnostic phase, USSR - 147315.

684. KARKACZ, J.:

Krzyzowki w nauczaniu biologii /Crossword puzzles in biology instruction/

Biol. w. Szk., 38,1985, pp. 309-311. 5 crossword puzzles.

Suggestion of five crossword puzzles to be solved during the instruction period. They can be used as homework as well.

didactics of biology, biology instruction, didactical game, homework, Poland, 141109.

11.3.1

685. DOBRECOVA, I.V.:

Organizacija praktičeskich del po ochrane prirody v pionerskom lagere /Organization of practical work to aid nature conservation in a Pioneer camp/

Biol. v Šk., 59, 1985, No. 3, pp. 64-66.

On the example of the A.A. Ždanov Leningrad House of Pioneers, the author shows possibilities of a good organization of a "green guard activities". They guard forest conservation and are present at talks about the methods of using forest growth, etc. "Blue guards" are aimed at water protection. The author also suggests possibilities of introducing individual pupils into collective tasks.

didactics of biology, biology instruction, labour education, Pioneer organization of children, camp, USSR - 147317.

686. HASS, G.:

Untersuchungen zur Nutzung und zum Schutz der Natur während der ökologischen Exkursion in Klasse 11/Studies aimed at nature conservation during ecologic excursion in 11th class/

Biol. in der Sch., 34, 1985, No. 5, pp. 194-198. Lit.7.

Excursions are suitable to form pupils' atitudes towards nature and its conservation. Locality of excursion is described. There are observations in the forest nursery, of water regulation, and information on protected plants. The occurrence of lichens marks pollution of environment. Occurrence of plant and animal species are introduced, as well as the laws of nature conservation.

didactics of biology, biology instruction, form of organization, excursion, GDR - 147317.

687. ZDŁBSKA-SIEROSŁAWSKA, J.:

Międzynarodowa olimpiada biologiczna Polska-Czechosłowacja /International biologic Olympiade Poland - Czechoslovakia/

Biol. w Szk., 38, 1985, pp. 311-312.

The first Poland- Czechoslovakia biologic Olympiade was held on 8th to 10th June, 1985, in Warsaw University. Its proceedings and results are described.

didactics of biology, biology instruction, form of organization, biologic Olympiade, Poland, Czechoslovakia, Poland - 147313.

13.1

688. HEINZEL, I.:

Zum Beitrag "Müssen wir den Fuchs in jedem Gewand erkennen" /Bios 4/84/ /To the contribution "We must recognize a fox in any dress" - Bios 4/84/
Biol. in der Sch., 34, 1985, No. 5, pp. 200-202.

The author agrees with the contribution from No. 4 of 1984. The knowledge level of 10th form pupils depends fundamentally on systematic revision and fixation of basic instruction matter. Various examples of tasks aimed at mistake correction, at recognition of unity in different objects, etc. are instroduced.

didactics of biology, biology instruction, 6th form, revision, examining, control, GDR - 147315.

13.5

689. CABAN, L.:

Egzamin wstepny z biologii na UMCS w Lubline w 1984 roku /Enrolment exams at UMCS in Lublin in 1984/
Biol. w. Szk., 38, No. 5, pp. 312-314.

Information on enrolment exams in 1984. They were written examinations in biology and Polish language, oral examinations in biology, chemistry or mathematics - according to the choice od students. Question index and examination results are added.

didactics of biology, biology instruction, university, enrolment examination, Poland - 147315.

690. CICHY, D.:

Na marginesie examinów specjalizacji zawodowej /On the margin of examinations in professional specialization/ Biol. w. Szk., 38, 1985, No. 5, pp. 283-285.

The author informs about 2 years experience in professional specialization examinations held according to Ministry of Education directions from 1983. On institutes of teacher preparation 229 biology teachers underwent the exams and received their diplomas. Results and proceedings of these exams are described.

didactics of biology, biology instruction, aprobation group, biology, teacher education, examination, Poland - 147305.

14.9

691. VOLKOVA, E.E.:

Naša gordosť /Our pride/

Biol. v Šk., 59, 1985, No. 2, pp. 57-58.

The contribution is devoted to secondary school teacher ZOJA ANTONOVNA ŠUBINA. She has been working in education for 40 years, first as first-form teacher, later as biology teacher and headmistress. A specific feature of her work is education towards patriotism influenced by her participation in Great Patriotic War.

didactics of biology, biology instruction, teacher, USSR - 147305.

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417